This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

[illegible] [illegible]

SAINT PAUL

UNIVERSITY

LIBRARY

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

SAINT PAUL

UNIVERSITY

LIBRARY

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

W26.3²:3

WAR DEPARTMENT . . OFFICE OF THE CHIEF OF STAFF.
SECOND (MILITARY INFORMATION) DIVISION.
GENERAL STAFF.

No. 3.

BULLETIN

OF

MILITARY NOTES.

No. II.

June 30, 1904.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1904.

INTRODUCTORY NOTE.

The attention of all concerned is invited to the fact that books, periodicals, copies of translations, and other material not confidential, on file in the office of the Second (Military Information) Division, General Staff, can be obtained by officers desiring to avail themselves of their use, by application to the Chief of the Division. It is requested, however, that material so obtained be returned in each case as soon as convenient.

Extra index sheets of articles appearing in the bulletin, printed on one side only, can also be obtained in similar manner by officers desiring them.

AUSTRIA-HUNGARY.

THE NEW INFANTRY DRILL REGULATIONS FOR 1903.

These new regulations have been approved by the Emperor, and came into force on the 1st of October last. The provisional regulation published in 1901 has been abolished. The principal changes introduced by this new regulation deal chiefly with close formations, with the length of the gymnastic step, and with the changes of battalion formations from column or line.

When the battalion is in action, the distance at which the battalion reserve should follow the fighting line (formerly 400 paces) is not now actually laid down in figures. One no longer sees in these regulations the precept laid down in the provisional ones, that the commander of the battalion on taking up the attack formation should expressly mention the number of section to be immediately sent to the firing line. A new heading, "Method of infantry action," has replaced the heading "Combat," hitherto in use. The limit of the distance at which troops may remain in close formations (formerly from 5,000 to 4,000 paces) is no longer expressed in figures. It merely states that they may remain in these formations as long as they have not entered the zone of the enemy's artillery action. The regulations for opening fire are enlarged. It now lays down that the advance should be pursued without interruption, as long as possible, until the opening of a general fire appears necessary. It was formerly laid down that "The advance should be continued uninterruptedly up to the distance for effective rifle fire, and then, according to circumstances, until the effects of the enemy's fire forces the troops opposed to it to open fire." It also lays down the precept that at drills in peace time, "All precipitancy in the attack should be forbidden, and it should be remembered that time is necessary to obtain a superiority of fire." Finally, there is an important difference between the new regulation and the old provisional one as regards the employment of reserves under the personal responsibility of the commander. A change has also been made in the supply of ammunition.—*From Journal of Royal United Service Institution, December 15, 1903.*

MACHINE GUNS FOR CAVALRY PURPOSES.

The adaptability of machine guns for cavalry purposes is engaging the attention of the Austrian military authorities. The guns with which the experiments are being carried out are mounted on carriages of the Prussian type, except when on the march, when a four-horse truck is substituted. Tripods are used in country where the hills are inaccessible to mules and horses. The guns are of the Maxim-Nordenfelt pattern, firing the infantry cartridge.—*From Unit d Service Gazette, November 28, 1903.*

TARGETS.

According to the Militar Wochenblatt, Austria has made great improvements in targets for rifle firing.

The ordinary square targets used in peace time were considered too high, thus tending to train the men to fire high, and new ones have been introduced of less height but greater length.

The old upright figures have been replaced by silhouettes reproduced from photographs taken of men in various likely positions. The background of the target is no longer white, but is colored like the surroundings. Arrangement is made by which the silhouette figures collapse on being struck.

GRAND MANEUVERS, 1903.

The grand maneuvers of the Austro-Hungarian army in the year 1903 took place in southern Hungary from the 3d to the 7th of September, inclusive. These maneuvers are designated the "Schlussmanoever," or closing maneuvers of the year. * * *

Cavalry maneuvers, in which three divisions of cavalry and one division of infantry, assisted by various detachments of infantry, participated, were carried out in Galicia from the 10th to the 16th of September. Foreign representatives were not invited to attend these maneuvers. * * *

The military attachés were invited to attend the maneuvers from the 3d to the 7th of September, inclusive, but were not invited to hear the discussion and criticism after the close of the maneuvers. The director of the maneuvers, his staff, the corps, division, and brigade commanders, with their respective chiefs of staff, the umpires and their assistants, and the military reporters were the only persons present at this discussion. * * *

The troops participating in the maneuvers this year were those of the Seventh and Twelfth corps. In the normal peace organization of the army the Seventh Corps consists of the Seventeenth and Thirty-fourth Infantry divisions, the Seventh Cavalry Brigade, and the Seventh Artillery Brigade; the Twelfth Corps, of the Sixteenth and Thirty-fifth Infantry divisions, the Twelfth Cavalry Brigade, and the Twelfth Artillery Brigade. For the maneuvers, the Seventh Corps was reenforced by the Twenty-third Royal Hungarian Landwehr Infantry division and by four and one-fourth squadrons of cavalry; the Twelfth Corps, by the Thirty-eighth Royal Hungarian Landwehr Infantry division and by the Fourth Royal Hungarian Cavalry Brigade, which, with the Twelfth Cavalry Brigade of the Twelfth Corps, formed the First Cavalry division. For the organization of these two corps for the maneuvers see Plates I and II. * * *

The total strength of the forces engaged in the maneuvers was 77 battalions, 43¾ squadrons, 152 guns, 7 pioneer companies, 7 bridge equipages, 2 telephone detachments, 2 balloon detachments, and the other necessary and usual auxiliary services. The average strength of a company was 130 men; of a squadron, 125 men; of a battery, 100 men.

NOTES ON MANEUVERS.

The sum of 38,000,000 crowns was voted last year for the creation of the howitzer and mountain batteries, but none of these batteries are yet in use. Material has been largely completed, but the organization of the batteries was contingent upon an increase in the annual levy of recruits. There is no prospect of any augmentation of the strength of the army in the immediate future. * * *

The heat during the maneuvers this year was intense, there having been no rain for many weeks; much of the ground

PLATE I.

ORDER OF BATTLE
of 7 Corps (without badges)

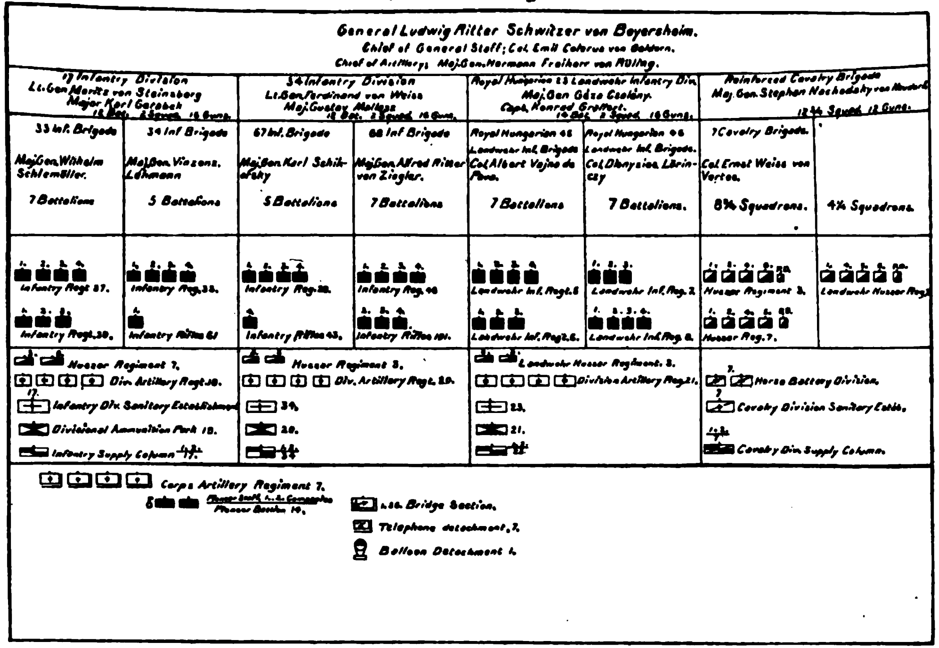
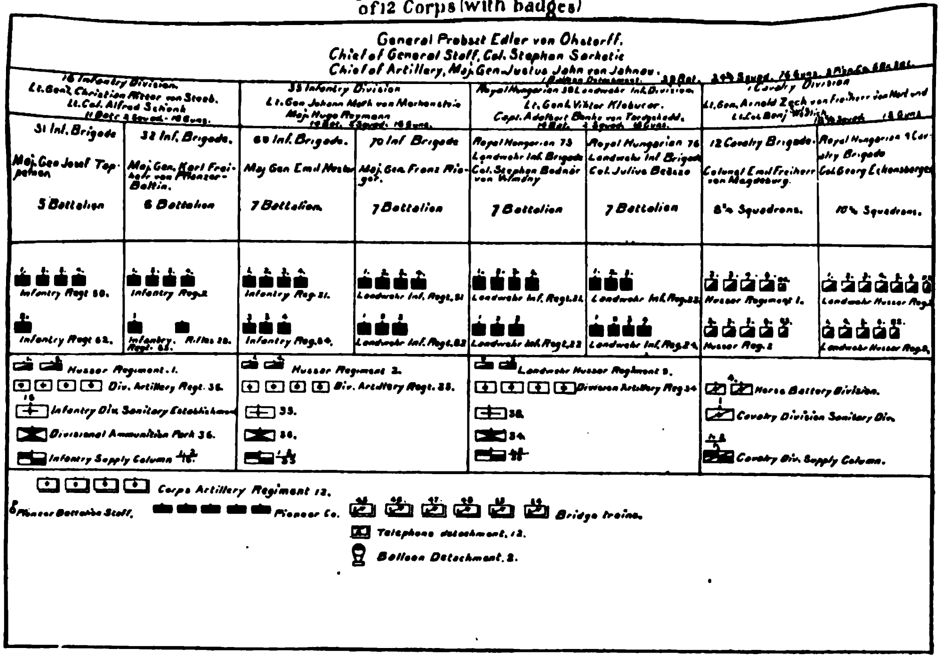


PLATE 11.

ORDER OF BATTLE
of 12 Corps (with badges)



over which the troops had to march had been plowed for the next crop, and the dust was generally trying and often almost suffocating. Yet with all the exhausting work required of the troops, with their long marches, which often began as early as 3 o'clock in the morning, with nothing to eat until noon, or later, and then, in the afternoon, with another long march for many to their cantonments, the infantry soldier weighted down with a pack of 62 pounds, I saw but one case of sunstroke and but one straggler on account of sore feet. I saw no other sick or stragglers from any other cause whatever. While there were doubtless several cases of sickness, most of them caused by the intense heat, yet, from my observation and from what I could learn, it may be accepted as a fact that there was an extraordinarily small loss from the line of battle on account of sickness of any kind.

To all the qualities of perfect training, great endurance, admirable discipline, and exemplary conduct, with especial reference to sobriety, respectful bearing, and soldierly appearance of the enlisted man of the Austro-Hungarian army, there should be added his remarkable cheerfulness in the most difficult circumstances.

If the Austro-Hungarian infantry, like that of most European armies, often fails to take advantage of natural cover in the attack, it fully appreciates the value of perfect cover in all defensive positions. Where natural cover did not already exist in such positions, artificial cover was promptly provided. Although the ground had been rendered almost as hard as a rock by a drought of about two months' duration, there was no more slighting of work in the construction of trenches than there would have been if the enemy had been using ball cartridges. With the excavated earth thrown to the front, these trenches were wide enough and deep enough to afford perfect cover for a man lying down against rifle fire. They were completed in the hard ground above described, with the infantry intrenching spades, in from 25 to 30 minutes. There is one of these spades to every two men.

It was observed that when the pioneer detachments of the infantry regiments were not required for any pioneer work of the latter they were employed in the construction of gun pits for the artillery. The pioneer detachment of a regiment of 3 battalions consists of 1 officer, 6 noncommissioned officers, 48 privates, and 1 officer's soldier servant; for a regiment of 4 battalions the number of noncommissioned officers is increased to 8 and the number of privates to 64.

I should like to emphasize my remarks in my report on the maneuvers of last year concerning the military value of the bicycle, and to add that the more I see of its unsatisfactory use for even messenger service on the battlefield, the more I become convinced of the impracticability of employing the bicycle or the motorcycle as a mount for fighting troops. The army that attempts so to employ these machines will promptly abandon them after the first battle in which the troops mounted on them are engaged.

On account of the large number of languages in use in the Austro-Hungarian army, all fire commands are repeated by the men. The object, distance, and kind of fire are given in the command. Then this fire is increased or diminished in rapidity by the men, according to the varying distance and importance of the object, without further command. The fire discipline is excellent.

Beef cattle were issued on foot to each regiment, which did its own slaughtering at the most convenient and suitable time and place. From all that could be learned, this system seemed to be perfectly satisfactory.

Most of the cavalry and artillery and part of the infantry returned to their respective stations by marching; 1,862 officers, 43,456 men, 4,327 horses, 278 military vehicles, and 2,113 tons of baggage were returned from the maneuvers by rail. It is reported that the loading of the troops, animals, and material that were to be transported by rail began at 6 o'clock in the evening of the 7th of September and that it was completed at 6 o'clock in the morning of the 8th of September—that is to say, in 12 hours and during the night; that 68 military trains, with 2,664 cars, were required, and that the loading took place for the Seventh Corps, at Vinga, Arad, and Uj-arad; for the Twelfth Corps at Mariaradna, Gyorok, and Paulis.

BRAZIL.

TELEGRAPH LINES.

Wireless telegraph communication is to be attempted between Para, Brazil, and Manaos, 1,000 miles up the Amazon. A land-line telegraph between these points is impossible, and the submarine cable recently laid in the bed of the river to connect them is said to be out of order three-fourths of the time. The cable company has therefore purchased the rights for a wireless telegraph installation.—*The Engineer, February 26, 1904.*

A line of telegraph connecting the capital of Matto Grosso with Rio de Janeiro has just been completed.—*Engineering, February 19, 1904.*

HARBOR IMPROVEMENTS OF RIO DE JANEIRO.

The long contemplated harbor improvements of Rio de Janeiro have been begun. They contemplate the building of a quay 11,666 feet long and the dredging of the bay to admit the discharging of vessels of heavy draft. It is calculated that the improvements will be completed in the course of ten years.

BULGARIA.

REORGANIZATION OF THE ARMY.

Since the beginning of the new year the reorganization of the Bulgarian army has been carried out as follows:

1. *Infantry.*—Nine instead of 6 divisions, each consisting of 2 brigades, making 18 brigades of 2 regiments each, instead of 12 brigades as formerly. In the place of the former 24 line and 12 reserve regiments there will now be 36 line regiments of 2 battalions of 4 companies each. There will in addition be an independent disciplinary company. The strength of each infantry regiment has been fixed at 817 combatants and 35 noncombatants.

2. *Cavalry.*—The hitherto permanent 4 cavalry regiments of 4 squadrons, the 6 divisional cavalry regiments of 2 squadrons, and the life-guard squadron will now be formed into 2 brigades of 2 regiments of 4 squadrons each, and 6 divisional cavalry regiments of 2 squadrons each. The life-guard squadron will be changed into a life-guard regiment of 2 squadrons. The strength of each cavalry regiment of 4 squadrons has been fixed at 583 combatants and 38 noncombatants, while that of each regiment of 2 squadrons is fixed at 292 combatants and 22 noncombatants.

3. *Field artillery.*—The number of field artillery regiments will be increased from 6 to 9 regiments, 6 of which will have 3 and 3 of which will have 2 brigade divisions of 3 batteries each. The strength of each of these regiments has been fixed at 599 combatants and 61 noncombatants.

4. *Mountain artillery.*—The mountain artillery, which has hitherto consisted of 3 brigade divisions of 3 batteries each, will be formed into 1 brigade of the same strength as formerly.

5. *Fortress artillery.*—This will, as formerly, consist of 3 battalions of 3 companies each. The strength of each battalion is fixed at 359 combatants and 43 noncombatants.

6. *Engineers.*—These have hitherto consisted of 3 battalions of 5 companies, 2 railway and bridging companies, and 6 transport companies. They will now be formed into 9 pioneer battalions of 2 companies, 1 railway battalion of 2 companies, and 1 bridging company. The strength of each pioneer battalion is fixed at 269 combatants and 14 noncombatants.

For the carrying out of this reorganization of the army the whole of Bulgaria will be divided into 9 divisional and 36 regimental districts. The staffs of the 5 infantry divisions, viz, those of Sophia, Dubnitza, Philippopel, Stara Sagora, Slivno, and of the 2 cavalry brigades of Sophia and Philippopel, will then be fixed south of the Balkans, while north of the Balkans will be quartered the staffs of the 4 infantry divisions of Vratza, Plevna, Rustchouk, and Schumla. Each infantry division will thus be quartered in its own district, and will draw its recruits and, in the event of mobilization, its reservists from there. This regulation will also be carried out with regard to regiments and their districts, and should considerably lighten the difficulties incident to changing from a peace to a war footing. The composition of every division will be precisely similar, viz, 2 infantry regiments of 4 battalions each, formed into 2 brigades; 2 squadrons of divisional cavalry, 2 artillery brigade divisions, and 1 pioneer battalion. According to the regulations, only officers of the rank of division commanders may be promoted generals, and thus only 5 colonels have been promoted to that rank. The divisions, then, will now be commanded by 8 generals and 1 colonel, the brigades by colonels, and the regiments by colonels and lieutenant-colonels.—*Precis from Internationale Revue, in the "Journal of Royal United Service Institution," April 15, 1904.*

CHILE.

BATTLE SHIPS.

The two Chilean battle ships *Libertad* and *Constitucion* have recently been purchased by the British Admiralty, the price paid being £1,875,000, including all expenses.

The former was built by Messrs. Armstrong, Whitworth & Co., and the latter by Messrs. Vickers Sons & Maxim. The contract for these vessels was given in the early part of 1902, with the stipulation that they be completed in eighteen months. Owing to the conclusion of peace between Chile and Argentina, the work has not been carried on as stipulated and the *Libertad* has only recently completed her official trials, obtaining a mean speed of 20.17 knots.

The armament of these vessels for their displacement is the most powerful of any afloat. Each carries four 10-inch guns, mounted in pairs in barbettes, fourteen 7½-inch quick-firing guns, fourteen 14-pounder quick-firing guns, 4 pompons, 4 Maxims, and two 12-pounder field guns. Each has besides two submerged torpedo tubes.

Each ship can fire a total weight of 13½ tons of projectiles in a minute, with a collective energy of 1,700,000 foot-tons. The armor consists of 7-inch belt amidship, with 3-inch fore and aft of the barbettes.

During the gun trials, the 7.5-inch quick-firing guns using 200 pounds projectile were fired at a rate of 8 rounds per minute, initial velocity with nitrocellulose powder being 3,000 feet per second. The 10-inch guns use a projectile 500 pounds weight, with a muzzle velocity of 2,850 feet per second.

PUBLIC WORKS.

United States Consul Mansfield, at Valparaiso, Chile, has forwarded to the Department of Commerce and Labor a printed report on a plan for public works in Chile, which has been submitted to the Congress now sitting in ordinary session. The plan involves an expenditure of over $93,440,000.

The principal item in the plan is the construction of railways to extend north and south along the coast leading to the rich nitrate fields in the province of Arica and Tarapaca.

The construction of moles and breakwaters will cost in round numbers $730,000. Seven hundred and thirty thousand dollars will be expended for improvements to facilitate navigation in the rivers Maullin, Imperial, and Valdivia, and the protection of the banks against inundations. The sum of $1,095,000 will be used for irrigation and water power, and $3,650,000 will be spent in sanitation and waterworks. In different parts of the Republic bridges will be built, at an estimated cost of $1,825,000. It is proposed to spread the execution of this scheme over a period of fifteen years, and payment will be made in treasury bills in 18-pence dollars (peso dollars of 36.5 cents), or the equivalent in currency at one and two years, to bear interest, payable half-yearly, at 5 per cent per annum, the bills to be issued as required.—*Washington Star, March 11, 1904.*

CHINA.

SMALL ARMS FOR CHINESE GOVERNMENT.

It is reported that the Waffenfabrik at Steyr, Austria, has recently received an order for a large number of small arms for the Chinese Government. It is stated that the order is of such size that it will take the factory several years to fill it, even with the employment of an additional force of men.

It is also reported that an Austrian firm, the Hirtenberger Patronfabrik, recently received an order from the Russian Government for 10,000,000 cartridges to be delivered at once.

CHINESE OFFICERS IN PRUSSIAN ARMY.

According to the Tageblatt, Berlin, April 25, 1904, there have been at Doctor Schaumburg's institution, 8 Chinese officers studying, among other things, the German language.

This course is now finished and these officers within a few days will be admitted to the local regiments in order to receive the desired military training.

By the order of the war ministry they will wear a special uniform, but not following the exact Prussian form. The officers have already been introduced to the officers at the general headquarters.

MONETARY STANDARD.

Silver is the monetary standard of China. Money of account is as follows:

10 cash or li	1 candareen or fun.
10 candareens or fun	1 mace or tsien.
10 mace or tsien	1 tael or liang.

Only the lowest denomination, the cash or li, is represented by an actual coin; the other denominations represent certain fixed weights of silver. The weight of the tael, which is the monetary unit, varies greatly in different parts of the country. The Government, or haikwan tael, in which customs duties are paid, is the generally accepted standard of comparison. The cash is greatly depreciated from its nominal value. Mexican dollars circulate at Amoy, Canton, Fuchau, and Hongkong. The Japanese trade dollar, Japanese yen, Hongkong or British dollar, and carolus or Spanish dollar, also circulate in the treaty ports. The value of the tael at the principal treaty ports, on October 1, 1901, was as follows:

Amoy	$0.691
Canton	.698
Chefoo	.661
Chinkiang	.675
Fuchau	.640
Haikwan (customs tael)	.704
Hankow	.647
Niuchwang	.648
Ningpo	.665
Shanghai	.632
Swatow	.639
Takau	.696
Tientsin	.670

—*From Foreign Trade Requirements, 1902.*

COREA.

THE KOREAN ARMY.

Since the reorganization of the Korean army, which was begun during the last 20 years of the last century, Chinese, Japanese, American, and Russian instructors, one after the other, have been employed, whose teachings are showing good results to-day.

The regular army of Korea is made up exclusively of infantry, and consists of 6 brigades; there are no cavalry and artillery. At the head of this is the "Garde Brigade" (guard) at Seoul, which consists of 5 battalions of 5 companies each, making a total of 2,500; the 5 province brigades have only 3 battalions of 5 companies each.

The strength of the army is 10,000 in round numbers, and is recruited entirely by enlistment. The monthly pay of a soldier is 6 yen (about 13 marks, or $3.12); uniforms, arms, and equipment are supplied by the Government. The pay is, considering the financial condition of Korea, quite high. So that it does not lack for recruits. Many soldiers who carry on a common mess are able to support their families from what remains of their pay.

The entrance into the army depends upon age and physical condition, and those who are in some measure of the same age and size are taken into the "Garde Brigade." Some of the provincial troops consist of half-grown boys.

The young officers receive their education in the military school at Seoul, where their education is confined almost entirely to practical training, military science only to the smallest extent being taught, and then only in the most elementary way.

The number of the young men who, according to their ability, remain in the school from 2 to 4 years, is 500. From 100 to 150 of these yearly enter the army as young officers.

The further promotion follows according to age, service, and influence. He who is not naturally clever or possesses no influential relations is liable to wait a long time for promotion. Notwithstanding the elementary status of the military academy at Seoul, as recorded from an European standpoint, the young officers, according to reliable reports, make on the whole an excellent impression. In their beautiful uniforms they look very stately, are easy (graceful) in their movements, attentive, amiable, and good natured; with the right kind of leadership they can become trustworthy, zealous, intelligent officers.

One gets quite another impression of the Korean generals and older officers.

The ordnance of the army consists of the castoff guns, etc., of the European armies as Verdan, Remington, and Gras rifles; of late they have the Mauser and Muratta rifles.

The target practice is still at a very low mark.

The guns are not carried with the usual care with which troops are wont to carry their arms, but instead are slung carelessly over their shoulders in open bags; and it is on account of the universal prize shooting contests of the people that the Koreans are such fine shots at such short range; they have no knowledge of shooting at long range, however, no doubt because neither commissioned nor noncommissioned officers are able to read the Arabic numbers upon the rear sights of the guns, which give the range in paces or meters.

It often happens in a battalion that one company will be armed with Verdan, another with Remington guns, and so on.—*Militär- Wochenblatt.*

CUBA.

BUDGET—1902–1903.

Receipts and expenditures from May 20, 1902, to June 30, 1903.

RECEIPTS.

Balance in the treasury May 20, 1902, transferred by the military government		$635, 170. 29
Balance in the hands of the fiscal agents May 20, 1902, to cover outstanding liabilities		1, 246, 594. 74
Revenue of the Republic, embracing:		
Customs	$16, 341, 428. 75	
Internal	976, 942. 73	
Postal	558, 053. 33	
Consular	61, 149. 14	
Various	69, 728. 74	
		18, 007, 302. 69
General money-order account		6, 047, 148. 42
Amounts returned to the treasury in worn checks		4, 082. 05
National Bank of Cuba		20, 360. 01
Returned payments, illegally made		34, 737. 89
Rural guard, for fines, etc		6, 443. 51
Artillery corps, for fines, etc		3, 307. 95
Funds allotted illegally for correctional judges and afterwards returned		9, 740. 96
Correctional judges, amount of fines remaining after covering expenses of the correctional courts		37, 492. 01
Postmaster-General of the United States, balance due him June 30, 1903		60, 835. 37
Total		26, 113, 215. 89

EXPENDITURES.

Postmaster-General of the United States (balance due United States May 20, 1902, for postal orders)	$115, 419. 28
Balance due fiscal agents by the military government May 20, 1902	27, 932. 99

Expenses of the Republic comprising: [a]		
State and government	$306,130.01	
Justice	135,223.24	
Municipalities	837,529.78	
Military department	47,427.76	
General expenses	61,986.37	
Legislative power	417,166.09	
Executive power	61,128.70	
Government	3,961,391.18	
State and justice	1,130,208.21	
Public instruction	3,634,349.61	
Treasury	2,077,436.33	
Agriculture, industry, etc	113,263.25	
Public works	3,150,406.18	
		$15,933,646.71
General money-order account		5,933,385.98
Pending debts		57.40
Worn-out checks left unpaid by the military government		3,874.06
Receipts returned because of illegal collections		89,523.59
Rural guard (charity)		4,993.64
Artillery Corps (charity)		1,148.78
Approved claims		4,085.27
Correctional judges (deficits)		18,020.21
Balance in the treasury June 30, 1903		3,172,463.01
Balance in the hands of fiscal agents		808,664.97
Total		$26,113,215.89

BUDGET FOR 1904-1905.

On January 26, 1904, the President of Cuba signed two enactments of the Cuban Congress specifying the budget for the fiscal year beginning July 1, 1904, and ending June 30, 1905. The total amount of the appropriations for all purposes for the period is $17,915,013.25; the total estimated receipts from all sources for the same period amount to $18,899,500; the excess of the estimated receipts over the appropriations is $984,486.75. The items that make up the appropriations and estimated receipts are as follows.

---

[a] This item represents the true expenses of the Republic for the period under consideration, and may be divided as follows:

Expenses from May 20, 1902, to June 30, 1902	$1,505,827.42
Expenses from July 1, 1902, to June 30, 1903	14,427,819.29
Total	$15,933,646.71

The appropriations are divided into those for "fixed expenditures" and those for all other expenditures specified in the enactment as "the annual estimate of expenses of the Republic."

Appropriations for "fixed expenditures:"		
Legislative power	$430,460.00	
Interest on the $35,000,000 loan	1,750,000.00	
Expenses of collecting taxes provided for in the loan law	337,562.00	
		$2,518,022.00
Appropriations for annual expenses:		
Executive power—		
President's office	$68,390.00	
Secretary of state and justice	386,855.57	
Secretary of government	4,979,827.54	
Secretary of treasury	1,903,499.06	
Secretary of public instruction	3,751,087.08	
Secretary of public works	3,023,004.00	
Secretary of agriculture	181,663.00	
Judicial power	1,102,665.00	
		15,396,991.25
Total		$17,915,013.25

The estimated receipts to cover the appropriations under the two heads given above are as follows:

Receipts to cover appropriations for "fixed expenditures:"		
Revenues on imports under the law of February 27, 1903 (loan law)	$782,000.00	
Revenues from the manufacture, sale, and consumption of articles specified in the same law	1,617,500.00	
Regular customs receipts	430,460.00	
		$2,829,960.00
Receipts to cover appropriations for annual expenses:		
Regular customs receipts, after deducting the portion appropriated for "fixed expenditures"	$14,316,040.00	
Consular receipts	250,000.00	
Postal receipts	500,000.00	
Internal revenues	610,000.00	
State properties and taxes	119,500.00	
Various receipts	274,000.00	
		$16,069,540.00
Total		$18,899,500.00

The appropriations for the army are included in the appropriation of $4,979,827.54 for the secretary of government, who is the secretary of war, and they are as follows:

Central administration			$2,900.00
War material commission and national armory:			
Personnel		$11,580.00	
Material		3,300.00	
			14,880.00
Rural guard (cavalry and infantry):			
Headquarters—			
Personnel	$15,040.00		
Forage and shoeing	652.00		
		15,692.00	
Troops—			
Personnel (1 regiment)—			
1 regiment headquarters	25,260.00		
8 troops cavalry	254,592.00		
2 companies infantry	58,968.00		
	338,820.00		
2 additional regiments, same as above	677,640.00		
		1,016,460.00	
Supplies (1 regiment)—			
Rations	104,244.00		
Clothing	45,320.00		
Forage and horseshoeing	68,134.00		
	217,698.00		
2 additional regiments, same as above	435,396.00		
		653,094.00	
General expenses—			
Rent and lighting		35,000.00	
Office material and printing		10,000.00	
Traveling expenses		5,000.00	
Utensils and sanitation		5,000.00	
Water, telephones, repairs, etc.		2,500.00	
Secret expenses		3,000.00	
Rewards for heroic acts		5,000.00	
Increased pay for reenlistment		20,000.00	
Unforeseen expenses		3,500.00	
			1,774,246.00

Artillery corps:		
Personnel	$57,912.00	
Subsistence, equipment, utensils, etc	42,443.50	
Material	20,990.00	
Lighting and unforeseen expenses	2,750.00	
		$124,095.50
Total for all purposes for the army		1,916,121.50

The approximate estimated expenses of the artillery corps for the year, as reorganized by the law, are as follows:

Personnel	$227,924.00
Material	30,710.50
For equipping the force	36,880.00
Clothing	42,000.00
Subsistence	65,700.00
Total	403,214.50

Or, $279,119 in excess of the amount included in the annual budget for the artillery corps. If this excess is added to the "Total for all purposes for the army," given above, the result, $2,195,240.50, will be more nearly the proper estimate for the year.—*M. I. D., 1812–1904.*

FRANCE.

EQUIPMENT.

Orders were issued under date of October 3, 1903, concerning the infantry pack and cartridge pouches and the gradual training of soldiers in carrying them. Recruits begin by carrying only the waist and shoulder belts and cartridge pouches. In the second month they are given the knapsack, which they must wear for all service drills and exercises under arms, except individual exercises and the preparatory aiming drills. Old soldiers are required, whenever under arms, to wear the knapsack, except in individual instructions with recruits and and at aiming drills. All gymnastic exercises are without the pack. Young soldiers begin by wearing the knapsack empty, after which the weight is gradually increased, so as to train all the men gradually in carrying their full pack without fatigue. The captain of each company prescribes each week for the week's drill, the articles to be loaded in the knapsack and pouches.

CARTRIDGES FOR TARGET PRACTICE.

On January 12 allowance of cartridges for target practice in 1904 was fixed as follows:

Infantry, each rifle, 120 ball, 30 blank; revolver, 120 ball. Reserves are allowed 37 ball and 10 blank cartridges for each rifle; in territorial troops 20 ball and 10 blank are allowed.

Cavalry, each carbine, 50 ball, 18 blank; revolver, 58 ball. Reserves are allowed 27 ball and 6 blank; in territorial troops 12 ball and 6 blank cartridges.

Artillery, each carbine and pistol, 24 ball, reserves 18, and territorial troops 12 ball.

Engineers same as infantry. Train same as artillery.

MILITARY BUDGET FOR 1904.

The law of December 30, 1903, fixed for 1904 the ordinary expenditures at 743,749,581 francs, as against 749,299,348 francs appropriated for 1903, and the extraordinary expenditures at 30,043,000 francs, as against 31,063,000 francs appropriated for 1903. The total amount of both expenditures is, therefore, 773,792,581 francs, as against 780,362,348 francs appropriated for 1903. The net decrease in the amount appropriated for 1904 from the amount appropriated for 1903 is thus 7,569,767 francs.

These estimates are for the support of the metropolitan (or home) troops stationed in France, Algeria, and Tunis; of the colonial troops stationed in France or in French colonies. The war department budget contains items for military purposes amounting only to 680,720,000 francs; but the budget of the minister of colonies contains also items for the same purposes amounting to 91,566,677 francs, and the naval budget includes expenses for artillery amounting to 1,505,904 francs (for the support of 209 officers and 1,083 men of the colonial artillery). Total as above 773,792,581 francs.

ORDINARY EXPENDITURES.

Among the ordinary expenditures, the items which follow are of interest:

	Francs.
General staff and staff services	12,239,213
Various departments and special staffs (personnel of controle service, intendance department, and artillery and engineer staffs)	31,217,433
Military schools (personnel and materiel)	11,205,878
Pay of infantry	154,053,101
Pay of administration troops	6,460,556
Pay of cavalry	28,744,258
Pay of artillery	38,038,669
Pay of engineers	5,055,322
Pay of train	3,649,408
Department gendarmerie	33,634,136
Republican guard	4,742,280
Reserve and territorial army	439,445
Artillery establishments (purchase and manufacture of material and ammunition)	16,673,818
Secret expenditures	530,000
Total	743,749,581

EXTRAORDINARY EXPENDITURES.

	Francs.
Railways and geographical service	725,000
Siege train	575,000
Field train	1,528,000
Armament of garrisons	600,000
Armament of coasts	4,600,000
Small arms	1,750,000
Ammunition	900,000
Experiments (artillery)	500,000
Buildings and machinery (artillery)	740,000
Buildings and barracks (engineers)	3,405,000
Fortifications	6,250,000
Engineers' stores	480,000
Drill and firing grounds	4,120,000
Defense of Bizerta	3,400,000
Establishments (intendance)	120,000
Establishments (medical)	350,000
Total	30,043,000

The effective strength which served as a basis for the budget of 1904 is as follows:

	Active army.		Gendarmerie and Republican guard.		Colonial troops.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.
1903	28,924	527,059	698	24,028	....	27,675
1904	29,000	520,831	683	24,034	....	27,572
Increase	76	....	....	6	....	....
Decrease	....	6,228	15	....	....	103
Decrease	6,152		9		103	

HORSES.

	Active army and gendarmerie.	Colonial troops.
1903	142,493	1 650
1904	142,474	1,650
Decrease	19	....

NOTE.—This table is as it is given in the budget. In cases in which no officers are given the officers are included in regimental strength.

The following tables show the distribution of staff, military schools, arms of the service, etc.:

STAFF.

	Officers.	Non-commissioned officers.	Total.
Generals of division	120	....	120
Generals of brigade	234	....	234
Officers of general staff service	950	....	950
Officers of the controle service	52	....	52
Intendance officers	1,426	....	1,426
Special artillery staff	1,239	643	1,882
Special engineer staff (officers, adjutants, etc.)	977	348	1,325
Total	4,998	991	5,989

Personnel *hors cadres* not classed in troop units.

Recruiting, penitentiaries, native affairs (officers and noncommissioned officers)	688
Medical personnel	1,290
Administration personnel	1,913
Veterinarians	71
Total of personnel outside of staffs, schools, and troop units	3,962

MILITARY SCHOOLS.

	Officers.	Men.	Total.
Polytechnic St. Cyr, all enlisted men's, and all the schools of application (to the total number of 18)	213	2,859	3,072

Distribution of various arms of the service.

INFANTRY.

	Officers.	Men.	Total.
163 regiments of infantry of the line of 4 battalions each (less 196 companies for incomplete 4 battalions)	11,194	278,075	289,269
30 battalions of rifles of 6 companies	1,002	28,606	29,608
4 regiments of zouaves of 5 battalions of 4 companies, plus 2 depot companies	418	13,025	13,443
5 battalions of light infantry (African)	165	7,605	7,770
4 companies of disciplinary fusiliers	16	1,000	1,016
2 foreign regiments (legion etrangere)	204	10,102	10,306
4 regiments of Algerian sharpshooters	504	20,484	20,988
3 companies of Labrarian troops	3	1,010	1,013
12 regiments of colonial infantry of 3 battalions of 4 companies each, stationed in France	1,173	20,475	21,648
French colonial infantry and native colonial infantry, stationed in the colonies	1,029	42,029	43,058
Total infantry	15,708	422,411	438,119

Distribution of various arms of the service—Continued.

ADMINISTRATION TROOPS.

	Officers.	Men.	Total.
21 sections of staff and recruiting secretaries		2,286	2,286
25 sections of military administration clerks and workmen		7,975	7,975
25 sections of military hospital attendants		4,889	4,889
Military administration clerks and workmen (commissariat) and hospital attendants of colonial troops	120	659	779
Total administration troops	120	15,809	15,929

CAVALRY.

	Officers.	Men.	Total.
79 regiments of 5 squadrons each, 13 of cuirassiers, 31 of dragoons, 21 of chasseurs, and 14 of hussars	3,476	57,641	61,117
6 regiments of African chasseurs of 5 squadrons each	258	4,722	4,980
8 companies of remount cavalry	27	2,850	2,877
4 regiments of spahis of 6 squadrons each	164	3,287	3,451
Native cavalry in the colonies	25	509	534
Total cavalry	3,950	69,009	72,959

ARTILLERY.

	Officers.	Men.	Total.
18 battalions of foot artillery	540	14,312	14,852
40 regiments of field artillery	3,170	48,392	51,562
Mountain batteries	62	1,993	2,055
African batteries	64	3,019	3,083
Musicians of artillery schools	19	741	760
10 companies of workmen	50	3,140	3,190
3 companies of artificers	12	303	315
3 regiments of colonial artillery of 12 batteries (4 field, 2 mountain, 6 foot)	222	4,812	5,034
Musicians of colonial artillery	1	39	40
Officers (cadets, etc.)	52	12	64
5 companies of workmen of colonial artillery	23	658	681
1 company of artificers of colonial artillery	5	138	143
Colonial personnel of artillery detailed to the naval service	209	1,083	1,292
Colonial artillery in the colonies	256	5,899	6,155
Total artillery	4,685	84,541	89,226

ENGINEERS.

	Officers.	Men.	Total.
Engineers in France, Algeria, and Tunis	596	14,150	14,745
Engineers in the colonies	9	363	372
Total engineers	605	14,513	15,118
Train	412	10,400	10,812

Distribution of various arms of the service—Continued.

RECAPITULATION.

METROPOLITAN TROOPS.

	Officers.	Men.
Infantry	13,506	359,907
Administration troops	....	15,150
Cavalry	3,925	68,500
Artillery	3,917	71,900
Engineers	596	14,150
Train	412	10,400
Total	22,356	540,007

Total, 562,363.

COLONIAL TROOPS.

	Officers.	Men.
Infantry	2,202	64,706
Administration troops	120	659
Cavalry	25	509
Artillery	768	12,643
Engineers	9	343
Train	....	....
Total	3,124	78,878

Total, 82,002.
Grand total, 644,365.

NOTE.—There are also included in the budget the gendarmerie and the garde republicaine. The former consists of 26 legions in France (596 officers and 20,985 men) and a Tunisian detachment (4 officers and 139 men). The latter consists of 36 battalions of infantry of 4 companies each and 4 squadrons of cavalry (total strength, 83 officers and 2,910 men).
—*M. I. D., No. 1175 a, 1904.*

THE WAR BUDGET—REPORT OF M. MAUJAN.

The budget scheme for 1904, as presented by the Government, is as follows:

	Francs.
First section—Home troops	622,480,964
Second section—Colonial troops	28,196,036
Third section—Extraordinary expenditure	30,043,000
Total	680,720,000

A corrected demand in excess has been presented by the Government, amounting to 426,160 francs; but, on the other hand, the budget commission has effected a decrease of 3,010,049 francs with regard to the first and third sections, so that the proposed credits now stand as follows:

	Francs.
First section—Home troops	620,057,357
Second section—Colonial troops	28,335,754
Third section—Extraordinary expenditure	29,743,000
Total	678,136,111

The credits voted for 1903 amounted to 687,803,242 francs, thus those voted for the present year are less by 9,667,131 francs than those of the previous year.

CHANGES ASKED FOR BY THE GOVERNMENT.

As stated above, the Government demanded an increased credit of 426,160 francs. The increase is required for—

1. The reenforcement in horses (44) for an artillery regiment insufficiently provided with them.
2. An increase in the pay of the cadres of the disciplinary sections of the African battalions, foreign regiments, and Algerian tirailleurs, so as to place them all on the same footing as the fusilier disciplinary companies.
3. The formation of native noncommissioned officers in the special branches of the service in Algeria.
4. The formation of three new provisional departments.
5. Ration allowances to reengaged noncommissioned officers of colonial troops, and extra pay to reengaged corporals and men on furlough, as has already been granted in the case of home troops.
6. Increase of the credits already provided in the budget for the rebuilding of the hospital at Nancy.

EFFECTIVES—REGULAR ARMY.

Officers.—The reporter calls to mind the observations made last year on the subject of the necessity for a prompt revision of the cadre regulation. The Government asked for the maintenance of 29,000 officers, instead of 28,924 as in 1903. The commission accepted all the demands for an increase with the exception of 10 captains of engineers.

Rank and file.—The provisions are established on an effective of 544,845 men, a decrease of 6,222 men on the 1903 budget. The chief cause of this decrease is the reduction of about 6,000 men in the yield of the contingents to be enrolled in 1904.

Horses.—The effective for 1904 is much the same as that of the preceding year.

Reservists.—The classes called out in 1904 have a rather weaker effective than those called out in 1903. The credits, too, demanded by the Government are smaller. The reporter proposes no change whatever.

COLONIAL TROOPS.

The reporter prefaces the examination of the budget for the colonial troops by some remarks on the garrisons most suitable for sending colonial soldiers to on their return home. He demonstrates that it is illogical to send these troops on their return from the colonies to cold damp places, such as Brest and Cherbourg. On the other hand, since the regulation has decided that young men of the colonial troops drawn from the contingent should not leave the mother country, it is illegal to have all the south Algerian stations, so deadly to all young people, garrisoned by men of the home contingent. The reporter is, consequently, of opinion that Brest and Cherbourg should be garrisoned by home troops, and be replaced in Algeria and Tunis by colonial soldiers. In conclusion, M. Maujan shows that the transfer of the colonial troops from the ministry of marine to the war department has only entailed an expenditure of 335,000 francs. It should be remarked that the colonial troops enroll 3,000 men of the contingent annually.

The effectives are as follows:

Men	27,572
Horses	1,650

—*From Journal of the Royal United Service Institution, December, 1903.*

RECRUITMENT.

Regulations were issued January 3 governing the number of three-year volunteer enlistments of men under 20 years of age each regiment may receive. In general, this is 20 enlistments for each infantry regiment, 10 for each cavalry regiment, and 12 for each artillery regiment. Each regiment of colonial troops may receive 40 such enlistments, which may be for 3, 4, or 5 years.

Conscripts do not begin their service until 21 years old.

RECRUITING STATISTICS FOR 1902.

The number of young men of the 1901 class, borne on the recruiting lists in January, 1902, amounted to 325,013, an increase of 15,681 on the number of those on lists of the preceding class. By adding those put back in 1900 (44,437) and in 1899 (23,397), the entire recruiting resources reached the total of 392,845 men, who were distributed as follows:

Exempt as unfit for service, deceased, etc	25,854
Debarred from service (criminals, convicts, etc.)	92
Put back	63,794
Residing abroad (out of Europe)	695
Naturalized, but exempt on account of age	1,252
Enrolled in the noncombatant branches	27,971
Serving as volunteers—	
In the army (*a*)	26,109
In the navy (*b*)	5,384
Enrolled for 1, 2, or 3 years	241,694
Total	392,845

Three thousand men of the contingent, enrolled for 1, 2, or 3 years, were posted to the colonial troops, thus reducing the home contingent to 238,694 men. During the course of the year the young men who enlisted before reaching the age for military service amounted to 19,839 in the home and to 4,673 in the colonial army. By adding these numbers to those mentioned above under the figures (*a*) and (*b*), the total amounts to 292,315 men, of whom 284,642 are enrolled in the home army. To be absolutely exact, 8,474 who failed to appear should be deducted from these numbers, as these men, although enrolled as if actually present, for the most part never join the colors.

The 241,694 men called up, and the 24,512 who enlisted before the age for military service, have been posted in the following proportions among the various arms and departments:

HOME ARMY.

	Called out for 1 year.	Called out for 2 and 3 years.	Enlisting for 3, 4, and 5 years.
Infantry	65,075	106,934	12,444
Cavalry	113	22,145	2,849
Artillery	9,900	20,794	3,833
Engineers	1,620	4,490	713
Transport	1,115	2,080	....
Administration troops, etc	1,720	2,708	....
Total	79,543	159,151	19,839

COLONIAL TROOPS.

Infantry	680	1,652	3,549
Artillery	63	605	1,124
Total	743	2,257	4,673

The contingent of those posted to the home army shows an increase of 24,596 men over that of the 1900 class, viz: 238,694 – 214,098 = 24,596. Under the heading of instruction the 325,013 recruits on the rolls are distributed as follows:

Can neither read nor write	13, 696
Can only read	3, 910
Can both read and write	33, 075
Have a more developed primary education	249, 969
Have certificates of primary education	5, 264
Have taken degrees	6, 770
State of education not known	12, 329

The calling to the colors of the men of the 1901 class took place on the 14th, 15th, and 16th of November, 1902.—*From Journal of Royal United Service Institution, December. 1903.*

RATIONS.

The sum of 4,790,000 francs, voted by Parliament for improving the soldier's ration, has been applied to increasing the meat allowance of each man by 0.02 francs per day, and with an allowance of 0.006 francs per man per day for wine and beer.

Regulations of March 11 require all officers in campaign to be provided with emergency rations the same as the men, but these rations to be carried in the company wagons. The meat rations for officers messing together are united in one package. The hard bread for officers is carried in the small linen sack similar to the men. Each organization will be provided with everything necessary to carry out the above regulations, the same applying to regimental and other staffs.

THE FRENCH CAVALRY.

According to the Militar Wochenblatt, General Négrier has disturbed the peace of mind of French cavalrymen by his new doctrine regarding the employment of the cavalry in warfare.

He advocates the use of cavalry in small bodies only, the largest being the regiment, and that they be commanded by younger officers.

He considers the concentration of cavalry a mistake, and recommends the use of individual squadrons, distributed over the whole front, for reconnoitering purposes. He proposes that the "shock tactics" be avoided and the lance abolished;

that with the increase of importance of fire action the importance of cavalry has been greatly increased, and that the use of the carbine should be especially developed; that cavalry should not be permitted to get to close quarters until the enemy has been defeated, and that then it may risk anything.

OFFICERS OF FIELD ARTILLERY.

On January 22 a circular was addressed to captains and majors of field artillery explaining the necessity of relieving those who are somewhat old of their command, in order that younger officers may have a chance to command these units in preparation for their duties in war.

FIELD ARTILLERY.

Experiments are being continued with a view to perfecting a rapid-fire gun for the use of the horse artillery, although nothing definite has yet been announced regarding the result of the experiments, and it is not known if a satisfactory type of gun has been determined upon. It is agreed, however, that the present 75 mm. field gun is too heavy to accompany cavalry divisions.

NEW MOUNTAIN GUN.

The Armee Territoriale announces that the war minister was present at Bourges, at the trials of a 240 mm. gun, invented by Captain Fournier, and a 68 mm. gun, the invention of Captain Ducrest. The latter is meant to replace the present 80 mm. mountain gun. It is divided into two parts, the barrel and the hydro-pneumatic brake, each weighing 100 kilograms; the carriage is provided with a spade to prevent recoil; the range of the gun is 3 kilometers. According to the above-named journal, the adoption of the Ducrest gun will give the same superiority to the French mountain artillery that the 75 mm. gun has already given to their field artillery.—*From United Service Magazine, December, 1903.*

WIRELESS TELEGRAPH POSTS.

Regulations were published on February 27, 1904, concerning the establishment of wireless telegraph stations on the French coast, and their use in time of war for military purposes. No post may be established without the authority of the department of commerce and with the consent of the navy department. In case of mobilization all such posts come at once under the naval authority.

USE OF CORK IN THE CAVALRY AND ARMY SUPPLY SERVICES.

The French military authorities have discovered a new use for cork in the cavalry and army supply services. It is in future to replace hair padding in all saddlery and harness. The advantages anticipated from the change are a diminution in weight, a saving in cost, and less tendency to sore backs and flesh galls amongst the horses.—*From United Service Magazine*, *February*, *1904*.

TARGET PRACTICE.

General order of September 7, concerning target practice, invites attention to the fact that instruction should not have for its sole object the making of good shots on the range, but the making of good shots on the battle ground, and that officers should devote their best attention to cultivating in the men those habits in shooting which will be useful to them in the excitement of battle.

The making of good records is not to be desired as much as the training of men who can shoot straight while being shot at.

Commanding officers are ordered to seek near their garrisons grounds suitable for temporary ranges, so as to give practice at unknown distances over unknown ground.

The use of conventional targets, bull's-eyes, etc., is discouraged. The use of silhouettes and of automatic targets, falling when hit, is urged. These can be made by the troops, and models are given. The silhouettes should be placed as they will be in battle and not along a straight line. The march of approach toward and the attack of these targets should be done as much as possible as in a fight. Too many companies fail to use all the ammunition allowed them, and the means of using this allowance advantageously are certainly to be found.

The efficiency of the commanding officers should be judged by their energy in teaching individual combat exercises and in instructing noncommissioned officers in the employment of various kinds of fire on numerous temporary target ranges, and in preparing ingenious targets, resembling those met on the field of battle.

MANEUVERS—1903.

In report on the maneuvers of 1902 reference was made to the excellent arrangement whereby a different region is selected each year for the grand maneuvers, thus offering not only variety of climate, soil, and physical peculiarity, but presenting to the officers commanding every possible problem of military terrain, including sandy wastes and snow-clad mountain ranges.

There were two "grand maneuvers," or maneuvers of an army, in France in 1903, one in the center and the other in the southeast. The former, under the direction of Général de Négrier, comprised the Twelfth and Thirteenth Corps, plus two brigades of cavalry. The latter, under the direction of Général Metzinger, comprised the Fourteenth and Fifteenth Corps, a brigade of chasseurs (à pied et Alpins), a brigade of zouaves, the Lyons brigade, and the Sixth Division of Cavalry. It was to these latter maneuvers that foreign officers were invited. * * *

The mobilization was complete on September 5. The troops from the distant points of Toulon, Nice, and Menton came by rail; the others marched.

September 6, 7, and 8 were devoted to maneuvers of division against division in each corps. September 9 was a day of rest. On September 10, 11, 12, and 13 the two army corps operated against each other. The 14th was a day of rest. On September 15 and 16 the Fourteenth and Fifteenth Corps united into an army operated against a figured enemy composed of two divisions of infantry (chasseurs, zouaves, and the Lyons brigade), and a division of cavalry, supposed to be two army corps.

As a rule, at maneuvers each infantry division consists of two brigades of two regiments, each of three battalions; one or two battalions of chasseurs (four companies each during maneuvers); two groups of artillery, 3 batteries each (24 guns in all); a squadron of cavalry (about 100 men), and an engineer company. The infantry companies were 150 strong (a maximum).

NORTHERN ARMY.

[General Grasset, commanding.]

	Officers.	Men.	Horses and mules.	Remarks.
Headquarters of the Fourteenth Corps	49	167	170	
Twenty-seventh division.				
Headquarters	17	65	62	
Fifty-third Brigade:				
Staff	4	19	5	
Seventy-fifth Regiment Infantry	55	1,707	91	
One hundred and fortieth Regiment Infantry.	60	1,493	39	
Fifty-fourth Brigade:				
Staff	3	18	13	
Fifty-second Regiment Infantry	60	1,795	59	
Ninety-ninth Regiment Infantry	62	1,737	67	
Divisional artillery	41	531	506	2 groups, 6 batteries, 24 guns.
Divisional squadron	7	86	96	
Engineer company	4	115	14	
Subsistence service	3	23	5	
Twenty-eighth division.				
Headquarters	18	118	51	
Fifty-fifth Brigade:				
Staff	4	15	16	
Thirtieth Regiment Infantry	52	1,823	75	
Ninety-sixth Regiment Infantry	53	1,717	60	
Fifty-sixth Brigade:				
Staff	6	15	12	
Twenty-second Regiment Infantry	57	1,585	65	
Ninety-seventh Regiment Infantry	60	1,591	62	
Divisional artillery	36	529	494	2 groups, 6 batteries, 24 guns.
Divisional squadron	8	87	100	
Engineer Corps	4	115	14	
Subsistence service	4	24	5	
Provisional division.				
Headquarters	15	50	35	
Brigade of Chasseurs à pied:				
Staff	6	17	12	
Fourteenth Battalion Chasseurs	24	621	31	
Twenty-eighth Battalion Chasseurs	24	607	29	
Thirteenth Battalion Chasseurs	22	504	38	
Thirtieth Battalion Chasseurs	24	558	29	
Lyon's brigade:				
Staff	3	15	4	
One hundred and fifty-seventh Regiment Infantry.	36	1,083	47	
One hundred and fifty-eighth Regiment Infantry.	33	1,120	45	
Elements not in a division.				
Corps artillery	15	298	308	1 group field, 3 batteries, 1 group horse, 2 batteries.
Fourteenth Cavalry Brigade:				
Staff	4	18	21	
First Regiment Hussars, 2 squads	20	210	236	
Fourth Regiment Dragoons	35	372	423	
Corps Engineer company	4	135	14	
Total	932	21,993	3,363	32 battalions, 8 squadrons, 17 batteries, 7 engineer companies.

SOUTHERN ARMY.

[General Mathias, commanding.]

Headquarters of the Fifteenth Corps	46	91	95	
Twenty-ninth division.				
Headquarters	21	64	59	
Fifty-seventh Brigade:				
Staff	5	14	12	
One hundred and eleventh Regiment Infantry.	58	1,574	63	
One hundred and twelfth Regiment Infantry.	66	1,669	71	
Fifty-eighth Brigade:				
Staff	4	12	11	
Third Regiment Infantry	55	1,767	69	
One hundred and forty-first Regiment Infantry.	50	1,800	66	
Divisional artillery	33	485	487	2 groups, 6 batteries, 24 guns.
Divisional squadron	5	85	92	
Engineer company	5	123	14	
Subsistence service	3	27	3	
Thirtieth division.				
Headquarters	25	66	61	
Fifty-ninth Brigade:				
Staff	4	13	11	
Fortieth Regiment Infantry	61	1,522	70	
Fifty-eighth Regiment Infantry	60	1,767	67	
Sixtieth Brigade:				
Staff	3	12	8	
Fifty-fifth Regiment Infantry	58	1,761	66	
Sixty-first Regiment Infantry	56	1,718	63	
Divisional artillery	36	517	497	2 groups, 6 batteries, 24 guns.
Divisional squadron	6	76	83	
Engineer Corps	5	107	14	
Subsistence service	3	27	3	
Sixth division of cavalry.				
Staff	19	85	72	
2 horse batteries	11	172	200	6 guns.
Sixth Brigade of Dragoons:				
Staff	2	9	10	
Second Regiment Dragoons	34	426	459	
Nineteenth Regiment Dragoons	38	434	471	
Fifth Brigade of Cuirassiers:				
Staff	2	9	10	
Seventh Regiment Cuirassiers	30	424	465	
Tenth Regiment Cuirassiers	30	404	457	
Elements not in division.				
Corps artillery, 2 groups	23	244	366	1 group field; 2 batteries. 1 group horse; 2 batteries. 4 batteries; 16 guns.
Provisional brigade of infantry:				
Seventh Battalion Chasseurs	26	658	31	
Twenty-fourth Battalion Chasseurs	23	590	32	
Twenty-seventh Battalion Chasseurs.	31	633	30	
Group of 2 battalions of Zouaves	36	1,160	45	
Fifteenth Brigade Cavalry:				
Staff	2	15	15	
Ninth Regiment Hussars, 3 squadrons.	32	333	381	
Eleventh Regiment Hussars, 3 squadrons.	36	349	394	
Corps Engineer company	5	122	14	
Telegraphists company	6	187	92	
Subsistence service	3	21	4	
Total	1,040	21,462	5,533	29 battalions. 24 squadrons. 18 batteries. 3 engineer companies. 1 company telegraphists.

BRIDGING THE RHONE.

This operation was performed in the afternoon of September 10.

The river at the place chosen is over 220 yards wide, with a current which in midstream reaches 6 to 7 miles an hour. It can be seen that no mean skill was required to build this bridge without check or accident and cross the infantry and wagons of the left column of the southern force immediately after.

Near the banks the water was very shallow, so that three tressels were used on each side. There were 29 pontoon boats used, all of steel. The bridge was constructed by successive boats, and was finished without hitch in less than three hours.

All the pontoniers wore life-preservers of the pattern usually seen on steamers, and when we consider the width and current of the Rhone the precaution did not appear useless. This equipment was adopted in 1899, and has been used ever since by engineer troops whenever they build a ponton bridge. It gives the men confidence and saves many lives during the season. There has not been a man drowned since the life-preservers were prescribed.

The details of this bridge building appeared to differ in no way from the methods used by us. The bridge was found perfectly solid and remarkably straight for such a current. The infantry and wagons crossed without incident. * * *

REMARKS.

In view of the extended observations given at the end of report of last year covering the general subject of the conduct of French maneuvers and recollecting that no change has taken place in the armament, equipment, or the system pursued, it seems unnecessary to add to the length of this report, except to speak of the Alpine troops.

The battalions of chasseurs à pied and chasseurs alpines are distinguished from the infantry of the line by a special uniform, a special organization, and a different cadence in marching (140 to the minute instead of 120). These official distinctions are but the beginning of many others, and there is no doubt that these troops form a "corps d'élite" meriting the term by superior soldierly qualities and esprit.

The so-called "corps d'élite" of other countries are generally "guards," stationed in the capital, recruited from men of unusual size, gorgeously uniformed, highly paid, and proud of themselves. They usually give a good account of themselves in a fight, but neither their origin, manner of life, methods of instruction, nor the military qualities of their officers, tend to make these troops as well instructed or as serviceable in war as those of the line.

On the contrary, the French chasseurs are distinguished from the line in dress only by a greater simplicity and serviceableness and by a heavier pack; in height, only by being as a rule shorter and more sturdy; in garrison, by holding the frontier; in instruction, by harder work and severer discipline; in pay, not at all.

This is the *corps d'elite*, which republican France has created for herself to replace the Imperial Guards of the first and third Napoleons. She gets from the same class of men more work and better instruction by the simple distinction of uniform and name. If you call a "chasseur" an infantryman, he will draw himself up proudly and say, "*Je ne suis pas fantassin, je suis chasseur.*" * * *

To the zouaves, 2 battalions of which took part in this year's maneuvers, the same remarks in part apply. A zouave is an ordinary Frenchman dressed like an Oriental, looking like a cutthroat, and holding himself to be the best man that wears a bayonet on his thigh. But he belongs to a corps that has traditions of splendid military service, and these he quickly imbibes and makes a better fighting man for the infusion. He wears a pack, towering far above his cap, that would kill an American soldier; but it is the way of zouaves to wear this load, and he would be insulted if you suggested reducing it. * * *

ORGANIZATION OF WAGON TRAINS.

Infantry.—The infantry trains will be composed as follows:

Infantry regiments of the Fourteenth and Fifteenth Corps (3 battalions each). For each regiment of infantry:

2-horse omnibus wagon	1
1-horse medical wagons	2
2-horse meat vans	2
2-horse luggage van for general staff	1
4-horse ammunition caisson	1

For each battalion of infantry:

2-horse ration wagons	2
2-horse luggage van	1
Pack mule for carrying tools	1
2-horse wagon for the cantiniere (pour memoire)	1

Artillery.—Each army corps taking part in the maneuvers will have its corps artillery composed of two groups, one of three field batteries and one of two horse batteries; each division will have its divisional artillery composed of two groups of three field batteries each.

Each battery will be constituted of four guns with six horses and four caissons with four horses each.

Each group, horse or field, will take:

Baggage wagon	1
Ration wagon, one of which can be arranged for carrying meat	4
Service vans	3
Medical ambulance	1
Wagon for the cantiniere	1

The number of horses for each group, field or horse, will be about 225, not comprising the horses of officers of the active army.

These are minimum figures; they can be exceeded if the number of horses available makes this possible after all other necessities are fulfilled. * * *

CAVALRY.

Cavalry Brigade.—The cavalry regiments taking part in the maneuvers will constitute their squadrons of about 100 horses each.

The trains of each regiment will comprise:

Forage and forage wagons	5
Ambulances	2
Meat wagon	1
Wagons for rations	8
Wagons for the cantinieres	2

These figures correspond to the requirements of revictualing the troops during operations. * * *

ENGINEERS.

Each army corps will have attached to it for the maneuvers a company of engineers, and each division a divisional company of engineers.

These companies will be supplied: to the Fourteenth Corps by the Fourteenth Battalion of Engineers of the Fourth Regiment at Grenoble; to the Fifteenth Corps by the Fifteenth Battalion of the Seventh Regiment at Avignon.

Each divisional or corps company will comprise:

	Horses.
1 sappers and miners' wagon	6
1 light wagon for explosives	1
1 two-horse wagon	2
Total	9

Note on execution of maneuvers, by General Metzinger, director.

At maneuvers, owing to the limited time at our disposal, we are often induced to rush the different phases of the operations a little too much, and to bring these operations to a stop when they could still be instructive; for instance, when they could illustrate the withdrawal from the fight, the retreat, or pursuit.

On the other hand it is indispensable to spare the troops, to keep as many in hand as possible and not to engage them prematurely, things we are naturally induced to do from the knowledge that the maneuvers can only last a short time.

For the purpose of reconciling these desiderata, the general commanding proposes to operate in the following way:

There will be no "assembly" sounded for the end of the maneuver. The maneuver is to continue until the object assigned to the parties has been attained or until darkness or fatigue make it necessary to suspend all movement.

In either case the troops will halt, establish their outposts, and, as soon as this is done, go to their cantonments. * * *

CONVENTIONS SPECIAL TO THE ARTILLERY.

During maneuvers it is impossible to know exactly at what time the opposing artillery will have regulated its fire; it is therefore necessary to agree upon certain conventions.

1. To begin with, the commander of any artillery group will only open fire after having made all the usual preparatory dispositions to assure the accuracy of fire, viz:

Reconnaissance of the position.

Repartition of the objective among the groups, batteries, and sections.

Designation of the objective to the pointers.

Laying of the pieces.

2. The artillery will indicate by the number of shots fired on what troops the fire is directed (infantry, 1 shot; artillery, 2 shots; cavalry, 3 shots); these last at intervals of five seconds.

At the same time each battery will set up a guidon indicating by its color the troops aimed at; red, infantry; blue, artillery; yellow, cavalry.

Lastly, so as to be more precise still, each battery will be provided with an optical apparatus (one by battery), which it will employ to direct (while firing) a flash of light on the troops aimed at. The latter will then see that they are being fired at, and will have to be umpired on if they do not immediately take the formations or dispositions required by the situation.

The process of regulating the fire, getting on the target, will be indicated by a flash, followed by dots, thus — . . . This signal will be repeated until the pointing is finished.

The efficacity fire will be indicated by a flash, followed by dots, the same as in getting on the target, but afterwards followed by a fixed flash, which will be maintained during the whole duration of the efficacity fire.

In case the weather will not allow the use of the optical apparatus, "rafales" (gusts of fire, always used in French artillery), will be indicated by four rapid shots.

As far as possible, an extra umpire will be specially attached to each group of artillery, charged to note the way in which the commander of the units of artillery make their preparatory dispositions, reconnaissances, march of approach, etc.

He will note especially the time when the latter discover the position of the opposing artillery and the dispositions taken by the troops fired at to take shelter.

UMPIRES.

The umpires this year were 5 major-generals and 2 brigadier-generals. To each of these were given a few officers (usually of his own staff) to aid him. These assistants did not actually umpire, except when they were detached by their chief with instructions to actively make decisions on the spot. Their duty was to follow a movement in all its details for the information and guidance of their chief; he alone made decisions.—*M. I. D., 797 g, January 16, 1904.*

ARMY MANEUVERS—1904.

As was the case last year, there will be two distinct army maneuvers in France. The one in the east will be under the direction of General Brugere, vice-president of the conseil superieur de la Guerre; the other maneuvers in the northwest will take place under General Hagron, member of the conseil superieur de la Guerre. In the eastern army maneuvers the following troops will take part:

The Seventh (Besançon) and the Eighth (Bourges) Army Corps, the Seventh (Melun) and the Eighth (Dôle) Cavalry Divisions, and a mixed division, consisting of the Fifth Colonial Infantry Brigade, two zouave battalions, and the Twenty-sixth Chasseur Battalions. The artillery of the two army corps will be completed as regards the Seventh Army Corps, by a brigade division of the Fourteenth, and by one from the Twentieth Artillery Brigade; that of the Eighth Army Corps by a brigade division of the Sixth, and by one of the Thirteenth Artillery Brigade. The divisional artillery of the mixed division will be entirely furnished by one of the regiments of the Nineteenth Artillery Brigade.

In the northwestern maneuvers the following troops will take part:

The Third (Rouen) and the Fourth (Le Mans) Army Corps, and the First (Paris) Cavalry Division. The artillery for the two army corps will be completed, as regards the Third, by a brigade division of the Second and another of the Nineteenth Artillery Brigade; the Fourth Army Corps will be completed by a brigade division of the Ninth and one of the Tenth Artillery Brigade.—*From Journal of Royal United Service Institution, April 15, 1904.*

THE NAVAL ESTIMATES FOR 1904.

The naval estimates presented to the Chambers by the minister of marine for 1904 amount to 312,931,832 francs, as against 313,471,524, approved for the current year, thus showing a decrease of 539,692 francs.

In the statement attached to the estimates, the minister of marine calls attention to the necessity imposed upon him of keeping the estimates as low as possible, in view of the present financial straits of the country, and the impossibility of exceeding the amount voted last year. He points out how the naval budgets of other countries, notably of England, Germany, Russia, and the United States, are steadily on the increase, and the disproportion between the French navy and those of some foreign powers is being accentuated more and more, and this in spite of the fact that the votes for new construction and for works connected with the different *points d'appui* for the fleet amount to 151 million francs and 148 million francs, respectively, an increase of 20 and 30 million francs over previous years.

The expenses of the fleet in commission absorb a very large part of the amount voted for the estimates, but no large reduction, in his opinion, can be safely affected here, as it is on the ships in active service that the officers, noncommissioned officers, and men are really trained. But the money so expended reduces the amount available for the construction of new battle units, the improvement of the dockyards, etc.; in a word, the material additions to the naval strength of the country.—*From Journal of Royal United Service Institution. December 15, 1903.*

TROOPS IN THE FRENCH COLONIES IN 1904.

The colonies have been formed into different groups with a commanding officer for each group to insure unity of action.

The groups are as follows: (1) Western French Africa, (2) Madagascar and Reunion, (3) Antilles and French Guiana, (4) Oceania, (5) Indo-China.

This arrangement has permitted a better distribution of the forces and it places upon the commander, in consultation with the governor, the responsibility of arranging beforehand for the defense of those colonies in his group.

In French West Africa we now have:

Battalion of colonial infantry	1
Regiment of colonial artillery	1
Regiments of Senegal tirailleurs	3
Squadrons of Senegal spahis	2
Independent battalion at Zinder	1

In 1903 there were only two Senegal regiments and some groups of batteries of artillery, so that the difference is noticeable.

At Madagascar we find 1 regiment of colonial infantry, 1 of colonial artillery, 3 of Madagascar tirailleurs, and 1 of Senegal tirailleurs. The native troops and the artillery have therefore been increased, whereas the European infantry has been reduced. The peaceful state of the country made this possible, though we deplore doing away with the "gendarmerie," especially for provost duty which can not be so well done by the native troops.

In Indo-China we have 4 regiments of colonial infantry, viz, the Ninth, Tenth, Eleventh, and Twelfth; 4 regiments of Tonquin tirailleurs, 2 regiments of Annam tirailleurs, 1 battalion of Camboge tirailleurs, 2 regiments of colonial artillery, and 1 provisional regiment of the foreign legion.

The reserve brigade comprises 1 regiment of colonial infantry, 1 regiment of Tonquin tirailleurs.

We therefore see that these troops have been increased by one-quarter, as was urged by Governor-General Doumer. The usefulness of this precaution is proved by the present state of affairs.

THE FOREIGN TOUR OF COLONIAL TROOPS.

A long order has been issued to the army, dated December 30, 1903, regulating the tour of service for colonial troops in the various colonies. The following extracts may be of interest:

4. The length of the regular tour in the various colonies (not counting time required for the journey) is as follows: India, 3 years; Reunion, 3 years; Martinique, 3 years; Guadeloupe, 3 years; New Caledonia, 3 years; Tahiti, 3 years; St. Pierre et Miquelon, 3 years; Indo-China, 2 years; Madagascar, 2 years; French Guiana, 2 years; Comora Islands, 2 years; Somali Coast, 2 years; Senegal proper, 2 years; military territories of French West Africa, 20 months. Former military territories: Soudan, Guinea, Ivory Coast, Dahomey, and Congo, 20 months.

5. Any officer promoted while abroad in a colony is maintained in it, or in one belonging to the same group, whenever

there is a vacancy in the new rank he holds, except those defined in paragraphs 9 and 10 in article 1 of this decree. If, owing to this promotion, there happens to be in a group of colonies more officers than the vacancies to be filled, the officers who have been in the colony the longest return to France.

7. In the colonies where the tour is 2 years or 20 months, the commanding general can himself authorize officers under his orders to remain another year. Excepting in extraordinary cases this permission can only be granted on the strength of a certificate delivered by the chief surgeon and of a report from the officer's commanding officer.

Officers may be authorized to prolong their stay for another year, but in this case permission from the minister is necessary.

The minister's permission is also necessary for prolonging a stay in colonies where the tour of service is 3 years.

8. Officers having prolonged for a year their stay in the colonies under conditions of article 7 can be authorized by the minister to return to France on a 6-months leave (not comprising journeys). During that time they are placed on European leave pay.

At the expiration of this time the officer is placed at the head of the list for colonial service, but he can only be sent back to the colony he has come from.

Any officer wanting leave of this sort must some time before his departure ask permission of the commanding general. This is transmitted, together with the medical certificate, to the governor of the colony who sends it, with his remark, to the minister for the colonies. The minister of the colonies sends it, with expression of opinion, to the minister of war, who sees that the vacant place is filled in proper time.

SERGEANTS AND ASSIMILATED EMPLOYEES.

13. Rosters of sergeants and assimilated employees are kept according to arms, service, and grades, for the colonial service.

Inscription on these rosters is made according to the following regulations:

(*a*) Sergeants not having served in the colonies come first, according to the date of their enlistment or incorporation in the colonial troops, if they belonged to the metropolitan troops. The oldest in grade or, in case of equality, the one incorporated the longest is to go first.

(*b*) Noncommissioned officers having already done service in the colonies are inscribed according to the date of their landing in France, and for those having just arrived, according to the time passed in the colony.

15. The regular tour for noncommissioned officers in the colonies is fixed so as not to exceed—

Four years in India, Martinique, Guadeloupe, Reunion, New Caledonia, Tahiti, St. Pierre, and Miquelon.

Three years in Indo-China and Madagascar.

Thirty months in French Guiana and Senegal proper.

Two years in the Comora Islands and Somali coast.

Twenty months in the military districts of West Africa, in the military districts and protectorates of Lake Tchad, in the former military territories of Sudan, Guinea, Ivory Coast, Dahomey, and Congo.

16. Sergeants are allowed to prolong for 1 year their stay in the colonies under conditions of article 7.

17. Sergeants can obtain 6 months' leave as specified in article 8.

18. Changes of tour for colonial service, for personal convenience, can be authorized by the minister of war.

20. *Corporals and privates.*—Lists for departure on which will figure all corporals and privates aged 21, and having been in the service at least 6 months, are established in each corps and service. They comprise:

Three-year volunteers; men from contingents having joined before the date of their obligatory military service; men who at this date asked and were found apt to enter the colonial service; volunteers who had asked to enter the colonial service.

(*b*) Four or 5 year volunteers.

(*c*) Reenlisted men *not having* served in the colonies.

(*d*) Reenlisted men *having* served in the colonies.

These lists are separate for corporals and soldiers. The names are inscribed according to the date of their arrival in the corps or their return from the colonies, and for those who can only be sent to the colonies upon asking, the inscriptions are made as the demands come in.

Article 26. The tour for corporals and privates is the same as for sergeants under article 15.

GERMANY.

THE GERMAN ARMY AT THE END OF 1903.

The quinquenniad law promulgated on the 25th of March, 1899, will come to an end on the 30th March, 1904. The German authorities thus see themselves confronted with the necessity of either very shortly presenting a fresh scheme of military law to the newly elected Reichstag, or else, as a certain proportion of the press announces, of asking for the maintenance of the present situation for another year, thus transforming the quinquenniad, voted in 1899, into a sextenniad.

It may be of interest to recapitulate the situation of the German army at a time when this question is about to be submitted to the Reichstag. This résumé is obtained from the Einleitung und Standorte des deutschen Heeres, of the 1st October, 1903, and only consists of figures, which, however, allow of a complete picture in a small space being presented. Before examining successively the various branches of the service, it may be as well to say a word on the larger units.

Larger units.—The German army at present consists of 23 army corps, 17 of which are Prussian, 1 Württemberg, 2 Saxon, and 3 Bavarian. The army corps has, as a rule, 2 divisions, with the exception of the First (Königsberg) and the Fourteenth (Karlsruhe) Army Corps, which have 3 each: finally, the guard possesses a cavalry division—the only one formed since the peace. Each division consists of 2 or 3 infantry brigades, 1 cavalry, and 1 artillery brigade. The units not attached to divisions consist of a large number of jaegar battalions, regiments of foot artillery, and pioneer and transport battalions. These two latter are generally distributed at the rate of one to each army corps. The 23 German army corps are subdivided into 48 divisions, plus 1 cavalry division, 106 infantry, 46 cavalry, and 46 field-artillery brigades. The budgetary effectives amount to 24,358 officers (not including doctors or military functionaries ranking as officers), 81,097 noncommissioned officers, 495,500 men (not including about 11,000 volunteers enlisted for one year), and 105,642 troop horses (not including 20,000 officers' chargers and about 6,500 for fatigue work), and one-year volunteers' horses.

Infantry.—The German infantry consists of:

a. Two hundred and sixteen regiments, of which 175 consist of 3, and 41 of 2 battalions.

b. Eighteen jaeger battalions. Altogether 625 battalions.

c. Fifteen machine-gun detachments.

This new unit *c* was introduced into the German army in 1901; the detachments, attached either to infantry or jaeger battalions, are distributed very unequally throughout the different army corps. At the present time the First Army Corps has 3, three army corps have 2, and six have 1 each. The budgetary effective of the infantry is 12,521 officers, 45,707 noncommissioned officers, 334,302 men, and 810 troop horses, not including the units mentioned above.

Cavalry.—The German cavalry consists of:

a. Ninety-three regiments of 5 squadrons, 14 of which are heavy cavalry, 25 Uhlan, 28 dragoon, and 26 light cavalry regiments. Altogether, 465 squadrons.

b. Seventeen squadrons of mounted jaegers.

These squadrons (*b*), raised successively since 1895, appear to have been at first intended, under the name of Meldereiter, to carry out a special rôle as orderlies and mounted escorts. Gradually the military authorities commenced to group them and to give them the same training as other cavalry squadrons. At the present time 5 of these squadrons form a so-called "combined" regiment, which is brigaded with an Uhlan regiment; 6 others are linked in twos to form detachments under a major; the six last are attached to the regiments belonging to various army corps. The cavalry effective budget is 2,440 officers, 9,688 noncommissioned officers, 57,255 men, and 65,937 troop horses, not including the personnel and horses mentioned above.

Field artillery.—The field artillery entirely reorganized by the law of the 25th March, 1899, consists of 95 regiments[a] of

---

[a] One of these is the instructional regiment of the field artillery school and consists of three brigade divisions.

2 or 3 brigade divisions each, which gives a total of 203 brigade divisions. The brigade divisions themselves are made up of 2 or 3 field or horse artillery batteries. The number of batteries amounts altogether to 583, of which 541 are field and 42 horse artillery. In the field batteries are included 66 field howitzer batteries. This gun, which has a caliber of 105 mm., was introduced into the German army 4 years ago. Each army corps has a brigade division of 3 batteries, with the exception of the Bavarian brigade divisions, which have only 2. Among the 42 horse artillery batteries, 22 are linked in twos into 11 brigade divisions of 2 batteries, which are attached as a third brigade division to certain regiments. They provide the cavalry divisions, formed on mobilization, with artillery. The budgetary effective of the field artillery is 3,062 officers, 11,909 noncommissioned officers, 53,301 men, and 33,624 troop horses, without including the personnel and horses mentioned at the commencement of this statement.

Foot artillery.—The foot artillery consists of:

a. Eighteen regiments, 2 of which have 3, and sixteen 2 battalions.

b. One instruction battalion at the Foot Artillery School of Gunnery, or altogether 39 battalions.

Battalions as a rule have 4 companies; some battalions, however, have 3, 5, or 6 companies. Altogether the number of companies in the foot artillery is 167.

c. Ten team groups.

These team groups have been raised successively by a budgetary vote since 1892, in order "to allow foot artillery to be employed in conjunction with the field troops," and are equipped and officered by the transport. They are attached to certain regiments at the rate of 1 per regiment. The distribution of the foot artillery among army corps is variable. The corps in the center of the Empire do not possess any, while those on the eastern or western frontier have each 1 or 2 regiments. A general idea of the distribution of these regiments may be formed from the fact that 8 of them are quartered in towns on the eastern and 10 in towns on the western bank of the Elbe. The budgetary effective of the foot artillery is 946 officers, 3,893 noncommissioned officers, 20,403 men, and 556 troop horses, taking into consideration the restrictions already mentioned.

Pioneers.—The pioneer troops consist of 26 battalions, 25 of which have 4, and 1, in Bavaria, 2 companies—altogether a total of 102 companies. There is also a pioneer battalion per army corps, and a second battalion in the First (Konigsberg), the Fifteenth (Strasbourg), and the Sixteenth (Metz) army corps. In these army corps the 2 battalions are grouped under the command of 1 chief, with the rank of a colonel. The budgetary effective of the Pioneers is 598 officers, 2,404 noncommissioned officers, and 13,033 men.

Line of communication troops.—These troops at present consist of:

a. Railway: 3 Prussian regiments of 2 battalions; 1 battalion in Bavaria.

b. Telegraph: 3 Prussian battalions, 1 Bavarian company.

c. Balloonists: 1 Prussian battalion; 1 Bavarian detachment.

Altogether about 11 battalions.

Each of the telegraph battalions has a team group provided by the transport, and which is attached to that branch of the service. The balloon battalion has also a team group which is specially attached to it by a regulation of March, 1902. The budgetary effective of the line of communication troops is as follows:

	Railway.	Telegraph.	Balloon.
Officers	185	50	17
Noncommissioned officers	723	173	54
Men	3,778	1,353	343
Horses			58

Transport.—The transport battalions number 23, at the rate of 1 per army corps. They all have 3 companies, with the exception of 1 of the Bavarian battalions, which has only companies. It has been seen above that in addition to the normal companies certain battalions have had since 1892 form team groups for service either of the foot artiller the balloon battalion, or the telegraph battalions. With exception of the latter all these groups are attached to troops for whose service they are meant. The budget effective of the transport is 332 officers, 1,814 noncom sioned officers, 6,491 men, and 4,657 troop horses.—*Journal of Royal United Service Institution, January 15, 1904.*

MOUNTED JAEGERS.

Contrary to what was stated in the German press, it would appear that the renewal of the "Military Quinquenniad," commencing on April 1, 1904, will not carry with it any appreciable increase in the cavalry, but will be confined to the raising of some new squadrons of mounted Jaegers. As is known, there exist at present 16 squadrons (2 of which are Bavarian), numbered from 1 to 7, from 10 to 12, 14, 15, 17, and 19; Nos. 2 to 6 are grouped into a "combined regiment" attached to the Fifth Army Corps, and Nos. 12 to 19 form a "combined detachment" attached to the Nineteenth Army Corps. There will, therefore, remain 3 to be raised in the German, and 1 in the Bavarian Army, in order that there may be as many squadrons as Army Corps, not including the guard, which already has its own squadron, and not taking into account the second squadron which the Seventeenth Army Corps possesses.—*The United Service Magazine, December, 1903.*

CALLING OUT OF RESERVISTS AND MEN OF THE LANDWEHR, IN 1904.

The general principles regulating the calling out of Reservists and men of the Landwehr for the present year are similar to those of preceding years, and may be summarized as follows:

1. *Prussia and States under the war department of Berlin.*—A third battalion, on a peace footing, will be formed in the Guards and Ninth Army Corps (which will maneuver before the Emperor) for the regiments consisting of two battalions, viz: In the Fifth Regiment of Foot Guards, in the Fifth renadier Regiment, and in the One hundred and sixty-second nd One hundred and sixty-third Infantry Regiments. A giment of infantry reserve, as far as possible, on a war oting, will be formed in the Second, Fourth, Seventh, Fournth, and Eighteenth Army Corps. A reserve field artillery igade division will be formed in First, Fifth, Sixth, Eighth, eventh, and Seventeenth army corps. Finally, the inspecn-general of foot artillery will form a reserve foot artillery

battalion. This year's effectives will be very similar to those called up in 1903, viz:

Balloon sections	419
Infantry	162,200
Jaegers	3,750
Field artillery	13,900
Foot artillery	7,000
Pioneers	4,200
Railway brigade	2,156
Telegraph troops	767
Transport	7,707

Two-thirds of those called out will be from the Reserve and one-third from the Landwehr. As a rule the infantry Reservists will be enrolled in existing units; commanders of army corps will lay down the measures to be adopted for the artillery and pioneers; special units will be formed for the transport. These units will be officered, in part, by officers and noncommissioned officers of the Regular Army.

2. *Bavaria.*—Reserve regiments, battalions, and artillery brigade divisions will not be formed in the Bavarian Army Corps. The total number of Reservists and men of the Landwehr called out will be:

Balloon section	50
Infantry	22,200
Jaegers	400
Machine gun detachments	15
Field artillery	2,730
Foot artillery	900
Pioneers, railway battalions, and telegraph company	1,100
Transport	1,410

Seven-twelfths of these figures are represented by Reservists.

3. *Saxony and Wurttemberg.*—The dispositions taken in Saxony and Wurttemberg are similar to those quoted above, the number called out being almost equal to that which is fixed for the Bavarian army.—*Revue Militaire des Armees Etrangeres.*

AUTOMATIC RIFLE.

A new Mannlicher automatic rifle, model 1903, loading with a clip of five cartridges, has given good results in a series of firing tests in Germany. Its weight is 3.9 kgs. The weight of the German service rifle is 4.1 kgs.

MACHINE GUNS.

Machine guns for the German army have been, up to the present time, furnished exclusively by the German Arms and Ammunition Factory (Ludwig Löwe), in Martinickenfelde, which has been granted by Germany and other countries right of equipping their armies. In the future, however, the manufacture of machine guns will be pursued in Government factories; the royal Bavarian arms factory is provided for the purpose. According to the information from Löwe's factory, the machinery for the factory is now in preparation.—*From Vossiche Zeitung, Berlin, April 23, 1904.*

THE NEW FIELD GUN.

The new field gun is pronounced as a compromise of the designs submitted by the Krupp and Ehrhardt firms. Some 25 batteries are to be constructed at once.

DISAPPEARING TARGETS.

It is reported that Lieutenant von Tschirschky und Boegendorff, of the Konigin Elizabeth Garde Grenadier Regiment of Berlin, has invented an electrical disappearing target which places the commander of the skirmish line in full control of the raising and lowering of the targets and at the same time enables him to simulate a return fire from the position of the target. He exercises this control from a switchboard which he carries on his person as he advances toward or retires from the line of targets.

The merits of the invention are in the electrical operation of the targets, in the absence of markers and the consequent danger thereto, and in the simplicity and cheapness of the plant. The men receive excellent practice in firing at disappearing targets, while a character of reality is given by the fact that every appearance of the target is announced by a shot therefrom.—*M. I. D., 1703–1904.*

PRESERVATION OF FRESH MEATS.

The new process of Doctor Emmerich of preparing and preserving meats is to inject a solution of acetic acid into the arteries of recently slaughtered beef and pork and to spray the surface. As the result of extensive trials conducted in the Bavarian army and elsewhere, it is estimated that meat so prepared will remain fresh, nutritive, and palatable for a period varying from two to four months, and that, being unaffected by heat or cold, it can be supplied to ships or troops serving in any climate. It is not canned.

AGE OF OFFICERS IN THE PRUSSIAN ARMY.

The appearance of the seniority list of the Prussian army, dated October 5, last, permits an account to be given of the age of officers of the various ranks. There still exist in the infantry, where the promotion is the least favorable, colonels who obtained their first commissions in 1868. If 22 years is reckoned as the average age for appointment to the rank of sublieutenant, it will be seen that these colonels must be 55 years of age. On the other hand may be cited the instance of another officer, who, although a sublieutenant of 1868, has already been a lieutenant-general for one and a half years, which shows how greatly selection enters as a factor in the promotion of officers of the German army. The unfavorable conditions of the infantry bring out the following facts, viz, while the senior captains of the infantry and transport are officers of 1878, and have consequently an average of 47 years of age, those of the cavalry, field artillery, and engineers obtained their first commissions in 1879, officers of the communication troops in 1880, those of the foot artillery and technical institutions in 1881. It is the same thing as regards the senior lieutenants, who in the infantry are sublieutenants of 1889, while in the other branches of the service they are sublieutenants of 1890.

In the Prussian infantry, therefore, an officer has 14 years' service before being promoted to the rank of captain, when he must then be 36 years of age. He remains a captain for 10 years, and is thus 46 years old before he becomes a major. With 9 years in the rank of major and lieutenant-colonel, it will be seen how difficult it is for an infantry officer to command a regiment before he is 54 or 55 years of age, and has 33 years' commissioned rank.—*From the United Service Magazine, February, 1904.*

NEW INFANTRY TACTICS.

One of the last numbers of the Kölnische Zeitung devotes an article to the new infantry tactics, and it may be of interest to give an analysis of it.

During the last grand maneuvers the German infantry put into practice a new method of attack, wrongly called the Boer attack (*Büren-Angriff*), as that method was never practiced by the Boers, except, perhaps, occasionally during the latter part of the campaign. The conditions of European wars, even when seen through the prism of the South African fights, do not justify opinions regarding a change in the character of the war of masses. The influence of infantry and artillery fire during infantry action is only felt during the phase of immediate contact, when it should strive to keep down its losses. That, at least, is the prevailing opinion in Germany.

In France a great deal is talked about the tactical consequences of the Transvaal war. The supposed preponderance of modern fire has brought about the formation of a school, of which General Negrier is the chief. General Negrier was in consequence ordered by the French military authorities to apply his ideas to the last grand maneuvers of the Twelfth and Thirteenth Army Corps. General Langlois, on the other hand, has strenuously resisted the novelties of the "modern style" and has explained his ideas in two well-known pamphlets.

Most authors who have studied the Anglo-Boer war have come to the conclusion that it is sufficient, in order to guard against the effects of modern fire, to introduce some changes into the present tactical formation; and the new regulations take this opinion into account. The new school, however, consider these changes insufficient, and desire a complete tactical reform. They are of opinion that the defensive has acquired such an immense superiority over the offensive that it is criminal to stop short at these modifications. The results of modern fire are, they say, so crushing that the only movements possible on the battlefield are those only that are essential for the purpose of placing the troops in such a position as to obtain the best field of fire, or where they can best escape the fire of the enemy. Cavalry attacks have, they maintain, become impossible, and cavalry should be merely mounted infantry if they are to be of any use. On account of the present conditions of the battle, the commander in chief can no longer direct it, and can only intervene by his personal entry into action; the decision will more or less rest on spontaneous individual efforts, and the battle between the soldiers themselves will take the place of that between generals.

In Germany they are skeptical with repard to the "new school," and hold to old tactical principles without at the same time denying that there is room for the adoption of some modifications in formations. These changes do not rest on the combined action of the three arms, but only affect infantry when closing with the enemy. This action excludes all regularly laid down formations, and infantry should take advantage of every fold of the ground from the commencement of the engagement up to the pursuit. Where there is no cover they should move in small groups, separated by intervals of from 5 to 10 paces. The small groups advance in short rushes of from 30 to 40 paces, so as to only be visible for a few seconds and offering but a small target, the groups not all advancing simultaneously. The front of a company on a war footing thus deployed in small groups is from 100 to 150 yards. These small units will thus advance successively by short rushes either to as close to the enemy as the fire will allow or until they reach some sort of cover. If there is no cover they would advance up to 700 yards of the enemy. At these medium ranges they are reenforced by the supports, who are continually coming up from the rear, and they then open fire. That is where the real attack commences. This, too, is in a similar manner carried out by small rushes until the assaulting fire line has obtained a superiority of fire and dashes to the assault. The attack delivered by the skirmishers is supported by the reserves, who follow in close formation at from 300 to 400 yards in rear.

The training of the German infantry is conducted on these lines: Each squad is trained to move with the rapidity of lightning when in the firing line. Every man is accustomed to judge distance quickly, and to utilize the ground; initiative, under the conditions in which he must act, is developed in him, because the influence of his commanders on the firing line will of necessity be very limited. Great stress is laid upon the movements of the squad, the half section, and the section with regard to the keeping of the front assigned them, and the given direction. As the fire from the small groups will not be sufficient, it will not be opened except from favorable positions. During the halts of the firing line every possible advantage must be taken of cover. The movement of a well-directed squad should conform to the position of the enemy and to the nature of the ground; sometimes it will advance at a walk and sometimes by rushes. It will sometimes close in and sometimes open out, but it will never lose sight of the enemy for a single second. Each section commander should control the distribution of his men into groups from time to time. Several groups should not take up a position at the same time on a front of 200 yards swept by the enemy's fire. Each group advances without shouting and without any special signal, and is supported by the fire of the neighboring groups, who are temporarily halting. Should there be no position in advance for a group, it should seek shelter in the line with the others, which it must not pass, and then continue its movements after the squad with which it became mixed up. Complete silence should be observed. Above all, the point of attack should be well selected and the movements of the neighboring groups constantly watched.

Supports and reserves should not expose themselves to the enemy in close formations at distances less than 1,200 or 1,400 yards, with the exception, of course, of the second period—that of the assault. At close ranges the supports and reserves must move in small groups like the skirmishers, their point of direction being clearly pointed out to them. All commanders must confine themselves to the limits of their duties, even to being prepared for the unexpected; must be able to pick out their exact positions according to the map and on the ground at the end of the affair, and be thoroughly aware of the duty devolving on them. Each of them should have some one selected to take his place. Connection with the fighting line is kept up by means of men at no greater distance from it than the voice will carry. Each skirmisher should pay attention to what is passing round him. The front of a battalion in action is 400 yards, and its movements are similar to those of a company.

During the last German grand maneuvers the infantry operated according to these principles, which are opposed to the tactics of the "new style."—*Journal of the Royal United Service Institution, December, 1903.*

MANEUVERS, 1903.

The scene of the German maneuvers of 1903 occupied the district lying on either side of the Saale River, extending from Halle southward to Camburg and from Leipzig west to a line Querfurt-Nebra-Sulza.

They take importance from the large number of troops that participated therein, numbering this year 4 army corps and 2 cavalry divisions. Since 1897, when 6 Bavarian divisions were opposed to 6 Prussian and Hessian divisions, the practice has been to restrict the total strength to 2 corps.

The presence each day of the King of Saxony and of the princes of the Thüringen States lent additional interest, and the participation of the full contingent of Saxon troops as a unit gave opportunity of comparing the relative appearance and efficiency of the army of Prussia with that of a confederate State of the Empire.

The Kaiser maneuver for the troops engaged is the culmination of a long series of field exercises, and to this can be attributed in great part the excellent showing in physical endurance. According to the present field service regulations the principal arms execute at first separately.

1. The regimental exercises of a duration—

a. Of 5 to 7 days for regiments of infantry, according as the elements are united or not in the same garrison.

b. Of 10 days for the regiments of cavalry.

c. Of 5 days for regiments of field artillery.

2. Brigade exercises of a duration—

a. Of 5 days for infantry.

b. Of 6 days for cavalry.

c. Of 3 days for field artillery.

These exercises occur generally in the camps of instruction. After these special evolutions the different arms are united for minor maneuvers that last 10 days and comprise the—

1. Brigade maneuvers.
2. Division maneuvers.
3. Division maneuvers against outlined enemy.
4. Army corps maneuvers.

For the troops designated for the Kaiser maneuvers this last period is reduced to 6 days.

The Emperor acted as chief umpire, excepting on the second day, when he commanded the cavalry corps, and on the last day, when he commanded the blue army. In his absence, Field Marshal Prince Albrecht, of Prussia, acted as chief umpire.

The maneuvers were planned and directed by General of Cavalry Count von Schlieffen, chief of staff. He formed, with his numerous staff, the maneuver direction, of which the headquarters were located at Merseburg. * * *

The red party, the Prussian Fourth and Eleventh Army Corps and cavalry division "A," were commanded by General of Infantry von Wittich, the commander also of the Eleventh Corps. In figures, this party consisted of 49½ battalions of infantry, 50 squadrons of cavalry, and 52 batteries of artillery, with auxiliary troops comprising 4 platoons of division bridge train, 8 battalions of pioneers, 2 squadrons of sharpshooters detailed on orderly duty, a detachment of balloon troops, a detachment of corps telegraph, and two detachments of machine guns.

Cavalry division "A," whose strength is included above, was composed of 30 squadrons of cavalry, of 2 horse batteries, of 2 detachments of machine guns, and of a detachment of pioneer battalion No. 4. The attaching of horse batteries and machine guns added greatly to the power of offense, while taking none from its mobility. (See Pl. III.)

The two cavalry divisions were but provisional organizations for the purposes of the maneuvers; in the German army there is but 1 division of cavalry existing, that of the Garde, of 4 regiments. In general, the highest unit is the brigade, which is attached to a division of infantry and consists of 2 regiments.

In the red artillery, it is to be remarked that the First Abteilung of the First Thüringen Field Artillery Regiment No. 19 is armed with the new experimental rapid-firing field gun; that its Second Abteilung is armed with the light field howitzers; the Second Abteilung of Field Artillery Regiment No. 4 with howitzers, and the first horse battery of the First Garde Field Artillery Regiment with the new experimental gun.

The blue party, consisting of the Twelfth and Nineteenth

PLATE III.

RED.

49½ BATTALIONS – 50 SQUADRONS – 62 BATTERIES

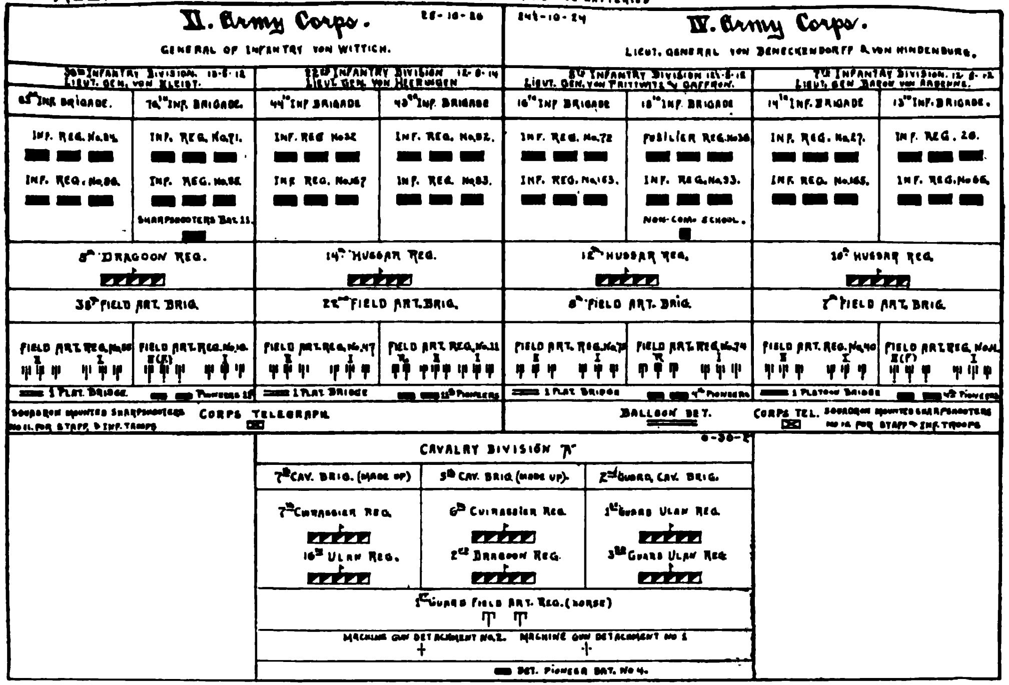
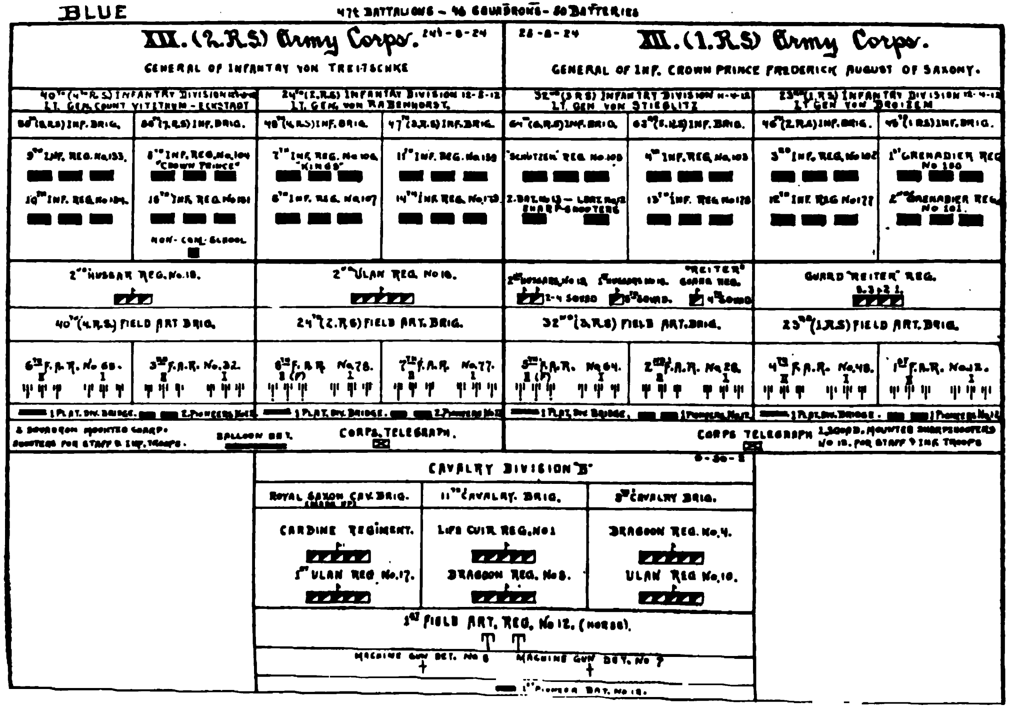


PLATE IV.


BLUE
47½ BATTALIONS – 46 SQUADRONS – 80 BATTERIES
XIX. (2.R.S) Army Corps. 24-8-24
GENERAL OF INFANTRY VON TREITSCHKE
40th (4th R.S) INFANTRY DIVISION
LT. GEN. COUNT VITZTHUM-ECKSTADT
24th (2.R.S) INFANTRY DIVISION 12-8-12
LT. GEN. VON RABENHORST.
88th (8.R.S) INF. BRIG.
89th (7.R.S) INF. BRIG.
48th (4.R.S) INF. BRIG.
47th (3.R.S) INF. BRIG.
9th INF. REG. No. 133.
10th INF. REG. No. 134.
8th INF. REG. No. 104 "CROWN PRINCE"
16th INF. REG. No. 181
NON-COM. SCHOOL
7th INF. REG. No. 106 "KINGS"
6th INF. REG. No. 107
11th INF. REG. No. 139
14th INF. REG. No. 179.
2nd HUSSAR REG. No. 19.
2nd ULAN REG. No. 18.
40th (4.R.S) FIELD ART. BRIG.
24th (2.R.S) FIELD ART. BRIG.
6th F.A.R. No 68.
3rd F.A.R. No. 32.
8th F.A.R. No. 78.
7th F.A.R. No. 77.
II
I
I (F)
1 PLAT. DIV. BRIDGE.
2 PIONEERS No. 22
2 SQUADRON MOUNTED SHARPSHOOTERS FOR STAFF & INF. TROOPS.
BALLOON DET.
CORPS TELEGRAPH.
28-8-24
XII. (1.R.S) Army Corps.
GENERAL OF INF. CROWN PRINCE FREDERICK AUGUST OF SAXONY.
32nd (3 R.S) INFANTRY DIVISION 11-4-12
LT. GEN. VON STIEGLITZ
23rd (1.R.S) INFANTRY DIVISION 12-4-12
LT. GEN. VON BROIZEM
64th (6.R.S) INF. BRIG.
63rd (5.R.S) INF. BRIG.
46th (2.R.S) INF. BRIG.
45th (1.R.S) INF. BRIG.
"SCHÜTZEN" REG. No. 108
2. BAT. No. 13 — LANZ No. 12 SHARPSHOOTERS
4th INF. REG. No. 103
13th INF. REG. No. 178
3rd INF. REG. No. 102
12th INF. REG. No. 177
1st GRENADIER REG. No. 100
2nd GRENADIER REG. No. 101.
2nd HUSSAR No. 18.
1st HUSSAR No. 19.
"REITER" GUARD REG.
2-4 SQUAD.
1st SQUAD.
4th SQUAD.
GUARD "REITER" REG.
1.3.2.1.
32nd (3.R.S) FIELD ART. BRIG.
23rd (1.R.S) FIELD ART. BRIG.
5th F.A.R. No. 64.
2nd F.A.R. No. 28.
4th F.A.R. No. 48.
1st F.A.R. No. 12.
1 PLAT. DIV. BRIDGE.
1 PIONEERS No. 12
CORPS TELEGRAPH
1 SQUAD. MOUNTED SHARPSHOOTERS No. 12. FOR STAFF & INF. TROOPS
0-30-2
CAVALRY DIVISION "B"
ROYAL SAXON CAV. BRIG.
11th CAVALRY. BRIG.
8th CAVALRY BRIG.
CARBINE REGIMENT.
1st ULAN REG. No. 17.
LIFE CUIR. REG. No. 1
DRAGOON REG. No. 8.
DRAGOON REG. No. 4.
ULAN REG. No. 10.
1st FIELD ART. REG. No 12. (HORSE).
MACHINE GUN DET. No 8
MACHINE GUN DET. No 7
1st PIONEER BAT. No 12.

Saxon Army Corps and Cavalry division "B" was commanded by General of Infantry von Treitschke, who retained his command of the Nineteenth Corps. The Crown Prince of Saxony commanded the Twelfth Corps.

Its total strength was 47½ battalions of infantry, 46 squadrons of cavalry, and 50 batteries of artillery, with auxiliaries—4 platoons of division bridge train, 8 battalions of pioneers, a detachment of balloon troops, a detachment of corps telegraph, 2 squadrons of sharpshooters for orderly duty, and 2 detachments of machine guns. (See Pl. IV.) * * *

It is frequently arranged for historical instruction and interest that the encounters shall occur on the site of some ancient battlefield and repicture some of its scenes. The parade of the Nineteenth Army Corps was held at Leipsic; the second day's battle was at Rossbach, while near by lie Breitenfeld and Lützen. * * *

The rules for the guidance of umpires are contained in the field-service regulations. * * *

Some special instructions relating thereto were given out, as follows:

Of first importance is for the umpires, attached to the general headquarters, to decide the artillery combat. This does not exclude that they shall also, according to circumstances, act as umpires in the engagements of other arms occurring in their vicinity, nor that the other umpires decide for single artillery groups.

Umpires attached to divisions should during the march to the front, while the engagement is on, betake themselves to such points where they can best observe their division and the opposing troops. It is also their duty at the breaking off of the fight to be vigilant and see that the outposts of the two parties take proper distances, the one from the other, and that they do not overstep the foremost line of outposts as fixed by the direction. The presence of the umpires or of their assistants on the maneuver field, after the breaking off of the fight, appears necessary in order especially that it should not happen that outpost companies and squadrons move to and fro until late in the evening, before coming to rest. In this regard, if necessary, the umpires may decide independently in case the direction is too far removed to act.

Umpires with their staffs should avoid, in the advance and in the first development of the fight, appearing in front of the "points" on the roads in such manner as to make it difficult for the troops to recognize the adversary, and they should avoid as well keeping on the roads and blocking them.

It is not right to designate an attack of infantry as successful, only because the attack disposes of one or two more battalions than the defense. Much rather the umpires should weigh whether the superiority of fire of the attack is sufficient to shake the defense.

The silencing of the artillery of the defense is alone no reason to direct the infantry, still in favorable position, to withdraw, unless the offense can operate successfully with his infantry; unless he envelops or outflanks his adversary the defense will often be able to hold his position for a long period. To judge the prospect of success of an attack there is to be considered in addition to the probable effect of the artillery fire against the hostile infantry position, also especially the number of skirmishers that have deployed under skillful use of ground cover. Also the attacking infantry must possess a fire superiority, be it through stronger deployment of skirmishers under covered approach or be it through outflanking.

When an attack has been pronounced successful, often the umpire does not permit an immediate pursuit, but as has happened, holds the assailant for a half hour in the occupied position. While in war a half hour is not much, in maneuver a delay of such length often means the breaking off of the entire fight. When a division thus kept back is permitted to begin the pursuit the adversary has disappeared and the pursuer arrives too late. On the other hand, the adversary who has been almost crushed is at once able to operate as an effective body; for example, against cavalry threatening its retreat. The umpires must therefore carefully consider how much time will be allowed the defeated party in order to reestablish proper separating distances. The umpires should prevent forced, unnatural pictures which may happen from the conditions of peace; but also they should preserve the leaders' freedom of resolution and not place them in impossible war situations.

In many cases of attack of cavalry against infantry the state of the latter is not considered. Defeated infantry on the retreat can not employ all its guns against a strong cavalry attack. By timely interference the umpires can prevent troops from using their full original number of rifles immediately after a severe defeat.

The maneuvers occupied five days, beginning on September 7. The first day was very warm, later the weather became cooler and strong winds prevailed. * * *

REMARKS.

The cavalry, as far as noticed, never dismounted to fire, but sought issue in shock. The charge is carried through at a gallop, and it is seldom that control of the horses or order in the ranks is lost. To meet any possible confusion, the rally is a frequent part of the drill.

In the maneuvers, while the artillery was held back, the cavalry was seeking its opportunity to engage closely, and in this they were more than once successful; but it is to be doubted if the element of surprise was present. The approach was betrayed by ever present clouds of dust.

In the maneuvers, whether all the tactical conditions invite a cavalry attack is of secondary importance. It is held that the instruction imparted to officers and men justifies a departure from the ordinary rules of war.

By the infantry, little was heard this year of the "Boer tactics." It is true the South African war, as well as our own war of secession, has been closely studied and its military literature is constantly being added to. There is little to show that a widely dispersed order of fighting will find favor in the German army; rather the tendency is to preserve traditions and to seek success in the fire superiority of massed bodies; and here is the raison d'etre of the machine gun. Where, therefore, the combat will open with normal thin lines, it will be brought to a decision by lines of shoulder to shoulder density.

That the field regulations permit the commanders much liberty of action in choice of formations, employment of supports and reserve is no contradiction, it is a liberty to profit of advantages or to meet the urgencies of battle. And accordingly at the maneuvers much diversity was seen in the handling of the infantry, early skirmish lines or an advance in column with delayed deployment, one thin line or successive reinforcing lines, supports in loose or compact formation, etc. The firing was practically all from the kneeling position. excepting some slight firing from shallow trenches. The absence of all disturbing elements, of noise of command, by word, bugle, or whistle was to be noticed, excepting for the announcing of the range.

The initiative of the rush belongs to group leaders, who seize the favoring moment and adjust themselves to a new alignment. The infantry used a range finder of the System Hahn. Cassel. It is contained in a tube about 2½ feet long, rests on a tripod that is set up in an instant.

The artillery in general occupied a retired position and fired over the heads of the troops on the firing line. This has the advantage of often allowing this arm to engage at an early stage of the action.

The first requirement of present and future German artillery must be its mobility, and hence a lightness of weight is demanded in every part; the loss of a gun by capture would be pardoned sooner than failure to overcome every physical resistance and to arrive on the battlefield. This lightness does not exclude the greatest strength of material, for the practice is to spare neither gun, horse, nor man.

An important problem before the German military authorities lies in the economical rearmament of its field artillery without wholly sacrificing the material on hand. The purpose is to convert the present field gun, model 96, into a rapid-firing gun of modern type. With this end in view, the new experimental gun retains the old barrel. The carriage is new and has not gained in weight. The breech has been altered without great expense after the model of the field howitzer, and opens and closes with a single motion. The sights are on the cradle; the front sight can be folded to one side.

The definite solution, believed to be favorable, awaits the conclusion of complete firing and field tests. Upon the result hangs also the reorganization of the field artillery, permitted by the increased fire of the new gun. Under the law of 1899 the artillery comprises to-day 46 brigades, 95 regiments, 202 abteilungen, and 583 batteries. The highest unit is the brigade, which counts in general 2 regiments. The regiments have normally two "abteilungen." There are 22 horse batteries, destined to constitute in time of war the artillery of the divisions of cavalry. Included in the above strength are 24 "abteilungen" of light field howitzers, 1 to each army corps and 1 to the school at Juterbog. Of the batteries, 352 have 6 guns and 231 have 4 guns. The reorganization will probably bring all batteries to uniform strength of 4 guns, and either the artillery arm will be reduced or new batteries constructed of fifth and sixth guns.

An improved transportable "observation ladder" has been recently constructed by Krupp for the use of field and foot artillery. It is 3-legged, of a weight of 21 kilograms, can be set up, or taken down, in less than 30 seconds, on the ground or on a limber when the latter is adjusted therefor by a simple arrangement. With the limber the stand elevates the observer about 5 meters. It is made safe and comfortable for the observer, seated or standing. The foot artillery has had observation wagons for a long period; they are now to be provided with the improved ladder.

The number of train battalions has increased in proportion to the rest of the army, until to-day it reaches 23 battalions, which are attached each to an army corps. In 1874 two companies formed a battalion; this has been progressively raised to 3 to each battalion, excepting for the Third Bavarian, which retains 2 companies. It is considered that for a noncombatant branch none exceeds it in importance and none demands a higher state of efficiency. It is required to engage in field exercises and maneuvers whenever practicable. In this year's maneuvers 8 battalions participated with the 4 army corps. It is not a popular branch of the service; officers and men are generally assigned to it. There is perhaps no part of the peace establishment that must, for mobilization, expand to the same degree as the train; with a maximum of 15 officers, 326 men in 3 companies, the organization remains skeleton. The first increment will probably be the addition of a fourth company.

It was common to see parties of enlisted men during a halt engaged in reading field maps; a certain number of these maps, together with field glasses, are issued free to each company, proficiency in their use being required. This is only a matter of company instruction, yet one is much impressed by the perfection of the service of information. This makes possible the celerity of field movements that characterize the German army.

The baking of bread in transportable field bake ovens has been found successful and was continued this year.

Preserved meat was issued to the army in patent protective cans of double cover, especially suited to service in the Tropics. Its adoption as a constituent portion of the army ration is reported as exceedingly probable.

No mention has been seen of frozen meats being issued or tried. The practice is to supply beef on the hoof. The slaughtering is done by the troops, assisted by professional butchers called in for this purpose from the reserve.

The daily ration was: Preserved meat, 200 grams; preserved vegetables, 150 grams; biscuits, 500 grams, or preserved meat, 200 grams; preserved vegetables, 100 grams; potatoes, 500 grams; bread, 750 grams. On one day the ration included the so-called "mixed vegetables," a mixture of meat and vegetables. Each battalion was allowed to take a sutler or cantine wagon along.

Water carts accompanied small units of troops and added much to their material comfort. The water is contained in a tank between the wheels below the driver's seat, and is served in rear from two faucets. The cart is of new model.

It is the duty of the communication troops to try any new apparatus facilitating the transmission of information. A special detachment of officers usually accompany the maneuver direction and corps staffs. Special attention was given to the trials of automobiles for the transportation of persons. A number of these was placed at the disposal of the maneuver direction and chief commanders. They were mostly automobiles with benzine motors, from 6 to 15 horsepower and higher, generally with two double seats. The chauffeurs were taken from the communication troops. They were able to operate the machines with facility on the good roads of the maneuver district.

The trials of last year of freight automobiles were not continued. It will first be exacted that the present machines be subjected to endurance tests. The war ministry and agricultural department have offered jointly a prize for the best draft automobile or traction engine, with alcohol motor, that shall draw a load of 15,000 kilograms at an average speed of

5 kilometers per hour, or 70 kilometers a day. In order to give the factories sufficient time the date for entering the competition, originally set for February 2 of this year, has been extended to November 1. The army will await the results of the competition before further trials.

The transporting of the troops back to their garrisons was more than usually complicated, as the Naumburg-Weissenfels line is subjected ordinarily to a very heavy traffic. A train passes about every 15 minutes. The regular passenger traffic was not disturbed; the freight, however, was sent around; 48 special trains were required, and these were loaded and sent off within 8 hours. This is only possible when the regular trains and the special trains start upon the minute, and the troops stand ready at the depot.—*M. I. D., No. 717 c, 1903.*

GERMAN ARMY MANEUVERS.

The following are some of the criticisms made by the French of the German tactics employed in their maneuvers:

Battle formations were lacking in depth; practically all the troops were sent forward in the firing line, the reserves retained by the commander being extremely weak, thus depriving him practically of further influencing the progress of the battle once begun.

No forces were retained on the defensive for use in the counter attack.

The cavalry was never employed to fight on foot.

MANEUVERS FOR 1904.

Cabinet order of February 28 prescribes that the imperial maneuvers will be executed this year by the Guard Corps, Berlin, General von Kessel, commanding, and the Ninth Corps, Altona, General von Bock und Polack, commanding.

The Guard Corps will be reenforced by a regiment of infantry and a regiment of dragoons belonging to the Third Corps. The Ninth Corps will be reenforced by a brigade of infantry (2 regiments of 3 battalions) of the Tenth Corps, a regiment of dragoons of the Third Corps, and a brigade of field artillery of the Tenth Corps.

Each of the 2 corps will have a section of balloon troops. The Guard Corps will be accompanied by 2 machine-gun sections, while the Ninth Corps, which has no machine guns, will receive those of the Third Corps. The 2 regiments of each corps having only 2 battalions will be completed by the aid of a third battalion formed from the reserves.

Subsistence columns will be formed by the train battalions of the Second, Third, Fourth, Fifth, Sixth, Seventh, Tenth, and Eleventh Corps.—*From Bulletin de la Presse et de la Bibliographie Militaires, March 31, 1904.*

NAVAL ESTIMATES.

The German naval estimates for 1904 are calculated at 225,300,000 marks, as against 217,000,000 marks estimated by the navy bill, or an increase of 8,300,000 marks; but the actual expenditure during the period 1900 to 1904 is calculated at 838,500,000 marks, as against 847,800,000 allowed by the navy bill, which leaves a balance of 9,300,000 marks, or a net balance of 1,000,000 marks, in view of the extra expenditure of the coming year. The ordinary expenditure is placed at 99,827,620 marks, or an increase of 6,558,366 marks. The allowance for Kiao-chau has been increased by 18,201 marks to 90,023 marks. Two new departments are to be added to the imperial navy office—a department for construction and a department for armament. The nonrecurring expenditure has increased by 1,904,500 marks, but the estimate for new construction has fallen 1,370,000 marks to 71,055,000 marks. Of this sum it is proposed to raise 32,115,000 marks by loan, while the remainder will be charged to the ordinary revenue. For guns a further sum of 1,880,000 marks is required. New naval undertakings, for which installments are asked, include a floating dock for torpedo boats at Kiel, an extension of the naval barracks at Kiel, a new block of barracks at Cuxhaven, as well as fortifications, waterworks, dredging operations, and new moorings for the gunnery training ships at Sonderburg.—*From United Service Gazette, November 28, 1903.*

NAVY PERSONNEL.

The Neue Militarische Blatter gives the following latest information regarding the personnel of the German navy:

After the enrollment of this year's recruits the effective of the executive personnel of the German navy will amount to

35,685 men, or an increase of 2,277 men on that of the same period last year. The corps of executive officers, which 10 years ago only amounted to 650, now consists of 1,200, or nearly double. The corps of engineers has increased proportionally still more, and consists of 210 instead of 75, as in 1893. The sailors' divisions include 14,776 men; that of the ports, 9,880 men; torpedo men, a personnel of about 4,000 men; naval detachments, about 2,400 men.

The annual increase during the last few years has amounted on an average to 2,500 men. Next year the official programme increases this effective to 40,000 men. Ten years ago, viz, in 1893, this effective was only 19,492 men, and has therefore almost become doubled in 10 years.—*From The United Service Magazine, December, 1903.*

DOCKYARDS OF GERMAN ADMIRALTY.

The German admiralty has its own 3 dockyards at Dantzig, Kiel, and Wilhelmshaven; there are also 7 large dockyards belonging to private firms, which also work for the admiralty. Germany has at the present time in course of construction 7 battle ships, 3 large and 4 small cruisers, and a river gunboat. Ten vessels were launched in 1903, viz, the battle ships *Elsass*, *Hessen*, and *Preussen*, the large cruiser *Roon*, the small cruisers *Hamburg*, *Bremen*, and *Berlin*, the gunboat *Eber*, and the river gunboats *Tsingtan* and *Vaterland.*

Germany has thus organized a battle fleet (*Schlactflotte*) of 2 squadrons of 8 battle ships each, and in addition a strong cruiser squadron. The second battle-ship squadron is not yet complete, and at present only consists of 4 battle ships. Thus only 4 armored coast-guard ships, 10 cruisers, 22 torpedo boats, and 9 various other vessels assembled at the last autumn maneuvers.—*From the United Service Magazine, February, 1904.*

GREAT BRITAIN.

TROOPS TO BE STATIONED IN SOUTH AFRICA.

According to the statement made in Parliament by the secretary of state for war, the South African garrison will comprise the following regular troops: 14 battalions of infantry, 2 regiments of cavalry, 2 horse batteries, 12 mounted batteries, 2 companies of garrison or fortress artillery, 6 companies of engineers and auxiliary service, making a total effective of 21,500 men.—*From Bulletin de la Presse et de la Bibliographie Militaires, March 31, 1904.*

EQUIPMENT.

"Regiments of cavalry will in future be armed with the carbine (or rifle) and sword. Regiments of lancers, dragoon guards, and dragoons will retain the lance as at present, but it will only be carried on escort duty, at reviews, and other ceremonial parades, not on guard, in the field, at maneuvers, or on active service.

"In issuing these instructions, the commander in chief desires to impress upon all ranks that although the cavalry are armed with the carbine (or rifle) and sword, the carbine (or rifle) will henceforth be considered as the cavalry soldier's principal weapon."

Infantry soldiers are no longer to carry intrenching tools as a part of their personal equipment.

On February 27 the secretary of state for war made the following important statement concerning the new quick-firing field gun and the new rifle:

"New patterns of quick-firing equipments for both horse and field artillery have been selected, and manufacture is about to commence. An improved pattern of rifle was approved in 1903, and for some months past both Government factories and contractors have been engaged on its manufacture. Deliveries of the new arm will commence at an early date.

"It has been decided to concede to the Indian government priority of supply of the new artillery equipments, as well as a large share of the first year's deliveries of rifles.

"It will not be possible to secure delivery during 1904–5 of more than the number of complete batteries assigned to India, but manufacture will be in full swing in the latter part of the year, and rapid deliveries of batteries for the home army will take place throughout the following year. Arrangements are being made to complete practically the whole rearmament, together with a large number of reserve batteries, by the 31st of March, 1907, at a total cost of about £3,150,000. This will involve a considerable increase on the army estimates of 1905–6 and 1906–7."

THE NEW SERVICE RIFLE.

The new service rifle has been manufactured in both Government and private factories and has already been issued to the three regiments of household cavalry and to the Thirteenth Hussars, to be used by them in musketry training this year. Most of the rifles turned out during the remainder of the year will go to India to rearm troops serving there and they will be paid for out of the Indian revenues.

The muzzle velocity, using the same ammunition that is used in the old pattern long rifle, is 2,030 foot-seconds, while that of the long rifle was 2,000. The pressure in both cases is 16½ tons.

The new rifle has a length of 1.13 meters, the same caliber as the old arm (0.303), and is provided with 5 grooves, making one turn in 0.25 meters. The system of breech closure is also the same, with certain improvements in the cocking-piece and in the sear, which in the Lee-Enfield quickly got out of order. The barrel is covered with wood throughout its length. The magazine contains 11 cartridges and is loaded by means of a steel "charger" in which the cartridges are held by flange. The rifle can not be loaded as a single loader and consequently only the cartridges in the magazine can be fired.

In the rifles of the new pattern to be issued to the navy a modification is made whereby the gun may be used as a single loader. The rifle is provided with a wind gauge.

It is proposed to have three different lengths of the butt, so as to give to each soldier a rifle proportioned to his height.

According to trial it is stated that the new rifle will have the following advantages over the present one:

Rapidity of firing increased 20 per cent.

Greater precision.

Initial velocity slightly superior.

And, finally, no appreciable recoil, due to the fact that the depth of the rifling is increased in the neighborhood of the muzzle.

NEW CAVALRY SCHOOL.

Orders have recently been issued providing for the establishment of a cavalry school at Netheravon, Salisbury Plain, and when it is fully established it is proposed to merge the riding establishment at Canterbury into the school at Netheravon.

RECRUITING AND DESERTIONS.

During 1903 40,339 recruits were taken, while in 1902 50,753 were taken. In each thousand of these 97 were rated as well educated, 907 were able to read and write, 15 able to read only, 11 unable to read.

The number of desertions from the regular forces during the first 9 months of 1903 was 4,653, of whom 2,141 rejoined, leaving a net loss by desertion of 2,412. The punishment for men who return to their commands and confess desertion is, in time of peace, comparatively light, and this accounts for the large number returning.

A recruit must now produce evidence of good character before he can be enlisted. This contributed to the difficulties of securing recruits during the last year, but as it prevents the enlistment of bad characters and tends to improve the tone of the army, the results in the long run will be beneficial.

SERVICE PAY.

The service-pay order of 1902 went into effect on April 1 of this year, and as a result of this and many other provisions favorable to the British soldier, his condition as regards pay allowances is better than ever before.

His pay account, however, is a very complicated affair; there are so many deductions and so many different rulings on the subject that the preparation of his account is a great care on the part of the company commander. In fact, the settlement of the soldier's accounts has become so complex and difficult that the army council will doubtless consider the entire subject in the near future for the purpose of simplifying it.

OFFICERS' EXPENSES.

The committee appointed "to suggest means of reducing expenses so as to bring commissions within the reach of men of moderate means," and for other purposes, submitted its report in July, 1902, and during the past year a number of changes have been made in accordance with the recommendations of this committee tending to lessen officers' expenses, especially those of cavalry officers, as will appear below.

OFFICERS' CHARGERS, SADDLERY, STABLE NECESSARIES, AND FIELD KIT.

Two chargers will be supplied at the public expense to each officer (except quartermasters) serving in a regiment of cavalry of the line, or in the Royal Horse Artillery, and one charger to every other mounted officer of the army (including quartermasters) except those serving with the staff, the educational establishments, the household cavalry, the army medical service, or the departments of the army, provided that the officer is not already in possession of a charger or of a troop horse. When the chargers cease to be serviceable for military purposes they may be replaced at the public expense.

Riding masters and quartermasters of the household cavalry will be provided with troop horses.

The chargers will be supplied for military purposes only. If, however, an officer wishes to use a charger for general purposes he may do so on payment of £10 annually, and after he has made six such payments no further charge will be made for the use of that particular charger.

An officer entitled to the use of a charger or chargers may be supplied with a set of saddlery at the public expense. No issue will be made to officers in possession of private saddlery until such saddlery is no longer fit for service.

All saddlery supplied free from store will remain public property, and will be accounted for and treated as part of the equipment of the unit to which the officer belongs.

Stable necessaries for chargers may be issued as for other public horses.

One set of horseshoes and nails per month may also be issued at the public expense for each public charger, but any further replacements must be provided by the officer concerned.

All officers gazetted to the regular army (except those posted direct to the Indian army) after December 1, 1902, will be supplied with field kits, which must be maintained at their own expense.

The kits will consist of the following articles, in addition to 3 new general-service blankets, to be obtained under regimental arrangements from barrack expense stores: 1 portable camp bedstead; 1 bag for same; 1 pillow; 1 waterproof sheet 7 feet by 4 feet 6 inches; 1 tripod washstand, with waterproof basin, bath, and bag; 1 folding chair; 1 waterproof bucket; 1 valise or kit bag to hold above articles, with officer's name and regiment painted upon it.

Officers will themselves purchase the kits, with the exception of the blankets. The articles will be of the approved pattern, and their actual cost, up to a maximum 5 pounds 15 shillings, will be refunded on the certificate of commanding officers that the kits are satisfactory.

OFFICERS' QUARTERS AND MESSES.

In future, at home stations, the quarters of all unmarried regimental officers (other than commanding officers) and all officers' messes will be furnished at the public expense.

Payments for this furniture to cover ordinary depreciation and replacements will be made at the following rates per diem:

	Pence.
Officers' quarters	1
Field officers' quarters	2
Riding masters' and quartermasters' quarters	3
Officers' messes: Each member, including commanding officers and married officers	1

Officers appointed to a unit whose mess has been furnished at public expense will not be required to pay the mess contribution (30 days' pay) which was required by the regulations when the messes were furnished by the officers themselves.

nor are they longer required to pay the likewise heavy contribution on promotion, transfer, or exchange if they go to a mess furnished at public expense.

Army Order No. 169 of October, 1903, is as follows:

"Extravagance amongst officers, individually and collectively, has long been forbidden by regulations. In view, however, of the financial concessions which have recently been made for the purpose of diminishing officers' expenses, it is the duty of commanding officers to see that officers derive full benefit from these advantages.

"If officers are extravagant in their mode of living it is the duty of a commanding officer to discourage and prevent it; and general officers are directed to ensure by careful periodical inspection that officers' messes are so conducted that it is possible for those of moderate means to live in the service.

"Should any commanding officer fail to carry out, in their true spirit and intention, the regulations of the service on a subject so materially affecting the interests and prospects of the younger officers, the commander in chief will seriously consider the propriety of retaining him in his command."

It was believed that these changes would result in reducing the expenses of all officers materially, and in putting cavalry officers approximately on an equal footing as regards expenses with officers of other arms of the service, so that it would be no longer necessary to recruit this arm from among the sons of wealthy men only, to the exclusion of young men of more promise, perhaps, but not having sufficient means to accept a commission in the cavalry. Accordingly the war department in May, 1903, published an order announcing that there would be in future no separate list of candidates for cadetships in the cavalry and foot guards at the Royal Military College, where cadets are prepared for commissions in the infantry and cavalry. The reasons for this change in respect of the cavalry, as is stated in the order, are as follows:

"In modern warfare the duties of cavalry officers of every rank are of so responsible a nature that it is essential they should be possessed of the highest professional attainments and be amongst the most capable, intellectually and physically, of those seeking admission to His Majesty's army.

"It is hoped that the measures that have been decided on, and in part carried out, with a view to reducing the necessary expenses of outfit and of living in cavalry regiments, will have the effect of opening this arm of the service to many capable men who, under the conditions that have hitherto prevailed, have been debarred by expense from entering it."

One might conclude that great changes would quickly follow from these orders, unless he stops to consider how impotent orders are even in an army where obedience is the first law, when they run counter to long-established customs backed up by equally well-established social conditions. The results will be something more than nil, but far short of what is expected by the most sanguine.

The financial inducements extended to officers in 1899 for the study of the Chinese language have been made to include the Japanese language, and several officers are now in Japan for the purpose of studying the language.

PROMOTION OF OFFICERS.

Hereafter commanding officers, in making up their confidential reports on officers of their commands, will recommend officers—

1. For accelerated promotion (which may be given either in their own unit or extraregimentally).

2. For promotion in the ordinary course.

3. For their promotion to be delayed for further report, but so far no provision has been made for actually promoting officers in accordance with these confidential reports, and for the present they are noneffective. This system of promotion does not meet with anything like universal approval in the army.

Hereafter officers of the militia, volunteers, and yeomanry who pass a satisfactory examination in military engineering, tactics and topography, military law, organization and equipment, and military history, are to have that fact noted in the army list.

PAY OF ENLISTED MEN.

Most of the changes made during the last year affecting enlisted men have for their object the improvement of his surroundings or an increase in pay and allowance. Army order

66 of 1902, amended by army order 193 of 1903, provides that—

"On and after April 1, 1904, the following further daily increases of pay shall be granted to all warrant and noncommissioned officers (including pay lance ranks); and to efficient soldiers, who have enlisted for more than 3 years with the colors, or have been permitted to extend their service, excluding Maltese or non-European soldiers, but including the Royal Garrison regiments:

SERVICE PAY.

	Pence.		Cents.
Efficient soldiers, Class I	6	about	12
Efficient soldiers, after 5 years' total service	[a]7	about	14
Efficient soldiers, Class II	4	about	8
Efficient soldiers, after 5 years' total service	[a]5	about	10

"Class I shall consist of all warrant and noncommissioned officers (including paid lance ranks); and of men who have completed 2 years' color service, and who have, in the opinion of the officer commanding their unit, attained all necessary proficiency in the duties of their arm, including in the case of cavalry and infantry such a standard in musketry as may be prescribed by regulation."

In the matter of classification for the purpose of this pay much is left to the commanding officer of the unit. It was expected that this increase in pay would induce a better class of men to enlist, and at the same time serve as an incentive to men in the service to become more efficient soldiers and to extend their period of service. As regards recruiting, it has not had the expected results, as many men of the class from which the army is recruited prefer present to future benefits. In fact, the recruiting department has not been able to meet the demand for recruits, although the demand has been less than usual on account of many of the organizations being above the normal establishment, due to the temporary increase during the South African war.

WAR OFFICE REFORM.

Following shortly after the appointment of Mr. Arnold-Forster as secretary of state for war in the early part of October, 1903, and as a result of the investigation by the commission of the conduct of the South African war, a committee of three members was appointed by the prime minister to recommend reforms in the administration of the war office.

---

[a] Increase of 2 cents for good conduct.

The committee, known as the war office (reconstruction) committee, consisted of three members—Lord Esher, the senior member and civilian representative, who served as a member of Lord Elgin's commission; Admiral Sir John Fisher, naval representative, and Col. Sir George Sydenham Clarke, army representative.

The report of the committee is in three parts. Part I was submitted in January, 1904, and is here given practically in its entirety. Parts II and III, which were contingent upon the approval by His Majesty the King of the principles laid down in Part I, were submitted the latter part of February and the early part of March, 1904, respectively.

With the exception of the section devoted to finance, Part II is given in its entirety. Part III is principally devoted to an elaboration of the principles laid down in Parts I and II. As this part of the report is quite long, the greater part of the text has been omitted, and the scheme of organization of each branch of the war office appears in the tabulated form as given in the report itself.

Report of the War Office (Reconstruction) Committee.

PART I.

The Right Hon. A. J. Balfour, M. P.:

Sir: In forwarding to you our report we desire to make a few observations which do not come immediately within the terms of our reference, and which can not, therefore, in our opinion, be placed upon record in a formal document.

While the arguments by which we sustain the proposals contained in section 2 of our report are fully stated, those which have lead us to the conclusions upon which section 1 is based are incomplete, inasmuch as we have thought it undesirable to analyse the constitution and functions as well as the actual and potential uses of the defense committee. To the defense committee, acting as the coordinating head of all the departments concerned in the conduct of and in the preparation for war, we look to fulfill the main functions of a general staff as they are now understood all over the civilized world by statesmen who have considered the necessities and the conditions of empire. The scientific study of imperial resource, the coordination of the ever-varying facts upon which imperial rule rests, the calculation of forces required, and the broad plans necessary to sustain the burden of empire have until quite recently found no place in our system of government. Although the defense committee of the cabinet germinated a few years back, its work has only recently become a reality. While fully appreciating the incalculable value of this achievement, we can not conceal from ourselves that the guarantees for, first, the permanent and continuous labors of the committee, and, second, their adequate discharge are not at present secured.

In considering the constitution of the defense committee itself we are fully alive to the vital necessity for having as its invariable president the prime minister of the day. Under our political institutions, based on the authority of a Parliament with traditions like ours, no body of experts, however highly trained and qualified, would carry sufficient weight and authority to give practical effect to their conclusions, unless the prime minister in whom governing power is vested were present at their deliberations and personally committed to their policy. If, therefore—and we assume this to be an essential condition—the prime minister is to preside over the defense committee, we fully realize the importance of leaving to him absolute discretion in the selection or variation of its members; but we would venture to suggest the vital importance of giving to that institution, yet in its infancy, as powerful a sanction for continuity and permanence as may be consistent with the retention by the prime minister of perfect freedom of action in regard to its component parts.

It may be presumptuous for us to make this suggestion, and we recognize the difficulty of attempting to draw the distinction so clear to us between the administration of the naval and military forces of the empire by past prime ministers. Still less can we attempt to anticipate further possibilities. We should, however, fail in our duty were we not clearly to define the urgent and vital importance of providing, in some shape or form, a permanent institution charged with the duties and responsibilities of calling the attention of the prime minister of the day to strategic problems of defense which are never constant to the actual conditions of our armaments and to the relation which the latter should bear to the former if the King's dominions are to remain secure. For this reason we have suggested the creation of a department—to use a well-understood term—for the defense committee, containing elements of a permanent character, following the well-tried and established precedents of British administration, located in close proximity to the residence of the prime minister and under his exclusive control. We have not proposed that this department shall be organized on a lavish scale at present. The material of which to compose it is scanty, but while we believe that the growth of all permanently useful institutions must necessarily be slow we confidently look forward to a time, if our proposal is adopted, when Great Britain shall possess a scientific body of expert opinion, highly trained to deal with all the problems of war suitable to her imperial requirements and necesary for her safety.

We remain, your obedient servants,

ESHER.
J. A. FISHER.
G. S. CLARKE.

G. F. ELLISON, *Secretary.*
JANUARY 11, 1904.

SECTION I.—*Defense committee.*

1. We have been directed to make recommendations for the reconstitution of the war office. Our task, as we understand it, is specially difficult, from the fact that for many years this department of state has been administered from the point of view of peace. It is necessary to make a complete break with the past and to endeavor to reconstitute the war office with a single eye to the effective training and preparation of the military forces of the Crown for war. Thus improvements of the existing machinery can not alone suffice to remedy the grave evils which the recent war has disclosed. Those evils must in great part be traced to a deeper source than defects in the administration of the war office. The evidence taken by the royal commission proves that the cabinet had in 1899 no adequate means of obtaining reasoned opinions on which to base a war policy. We are strongly impressed by the gravity of

the danger thus incurred, which would in circumstances easily imagined lead to a national disaster. At the outset of our enquiry, therefore, we are driven to the conclusion that no measure of war-office reform will avail unless it is associated with provision for obtaining and collating for the use of the cabinet all the information and the expert advice required for the shaping of national policy in war and for determining the necessary preparations in peace. Such information and advice must necessarily embrace not only the sphere of the war office, but those of the admiralty and other offices of state.

2. The defense committee of the cabinet as now reconstituted is intended to fulfill this imperative requirement, but we are convinced that further development is essential. A committee which includes no permanent nucleus and which is composed of political and professional members, each preoccupied with administrative duties widely differing, can not in our opinion deal adequately with the complex questions of imperial defense. Valuable as is the work which this committee has accomplished, the fact remains that there is no one charged with the duty of making a continuous study of these questions, of exercising due foresight in regard to the changing conditions produced by external developments, and of drawing from the several departments of state and arranging in convenient form for the use of the cabinet such information as may at any moment be required. Failing the provision of such an equipment, we are convinced that the Government can not be in a position to arrive at sound conclusions in regard either to the needs of war or to the preparations required in peace. We believe that the result has been, and must be, misdirected effort, involving risk on the one hand and waste on the other. The object should be to secure for the British Empire, with the least possible derangement of existing machinery, the immense advantages which the general staff has conferred upon Germany.

3. Our national problems of defense are far more difficult and complex than those of any other power. They require exhaustive study over a much wider field. The great general staff at Berlin is the machine by which the Emperor—who is charged with maintaining the efficiency of the army and who would be its commander in chief in war—directs and controls the military policy of the German nation. Differences of con-

ditions forbid the reproduction of the German system in this country, where the responsibility for the efficiency and sufficiency of the preparations for war rests upon Parliament, and in a special sense upon the prime minister. We hold that it is essential to provide the latter with adequate means of discharging his heavy obligations to the Empire.

The imperative need for harmonizing naval and military policy in the broadest sense has been partially at least recognized. Proposals for meeting it by combining under a minister of defense the administration of the navy and army have been made from time to time, and notably by Lord Randolph Churchill in a memorandum appended to the report of the Hartington commission.

5. The commission rejected this proposal for reasons which appear to us to be unimpeachable, but which might have been materially strengthened, since the bulk of the regular troops of the Empire, the 220,000 men in India, as well as the whole of the colonial forces, would lie outside the authority of the suggested minister of defense.

6. The grave danger to which we call attention remains and demands effective remedy. The British Empire is preeminently a great naval, Indian, and colonial power. There are, nevertheless, no means for coordinating defense problems, for dealing with them as a whole, for defining the proper functions of the various elements, and for insuring that, on the one hand, peace preparations are carried out upon a consistent plan; and, on the other hand, that in time of emergency a definite war policy based upon solid data can be formulated. It would be easy to show that unnecessary weakness, coupled with inordinate waste of national resources, thus results.

7. The existing defense committee has, under the auspices of the present prime minister, proved capable of useful work. There have been, however, in the past, and there will be in the future, prime ministers to whom great questions of imperial defense do not appeal. The committee is necessarily a changing body.

It is not safe to trust matters affecting national security to the chance of a favorable combination of personal characteristics.

We are therefore convinced that the addition of a permanent nucleus to the defense committee is essential as the only valid guaranty (1) that the vitally important work in which no one is now charged shall be continuously and consistently carried on, and (2) that the prime minister shall have at his disposal all the information needed for the due fulfillment of his mighty responsibilities; and, further, we can conceive no other means of focusing questions of national defense under existing conditions without involving constitutional changes, which would be undesirable, if not impracticable.

8. Before proceeding to discuss the reconstruction of the war office, we are impelled to urge the immediate provision of what is in actual fact the corner stone of the needed edifice of reform.

9. The permanent nucleus of the defense committee should consist of (1) a permanent secretary, who should be appointed for five years, removable at pleasure; (2) under this official, two naval officers selected by the admiralty, two military officers chosen by the war office, and two Indian officers nominated by the viceroy, with, if possible, one or more representatives of the colonies. These officers should not be of high rank, and the duration of their appointment should be limited to two years.

10. The duties of the permanent nucleus of the defense committee would be—

(*a*) To consider all questions of imperial defense from the point of view of the navy, military forces, Indian, and the colonies.

(*b*) To obtain and collate information from the admiralty, war office, Indian office, colonial office, and other departments of state.

(*c*) To prepare any documents required by the prime minister and defense committee, anticipating their needs as far as possible.

(*d*) To furnish such advices as the committee may ask for in regard to defense questions involving more than one department of state.

(*e*) To keep adequate records for the use of the cabinet of the day and of its successors.

11. We consider that the functions now vested in the joint naval and military committee for defense and in the colonial defense committee should be transferred to the defense committee. These two committees should, therefore, be dissolved

as soon as the permanent office, which it is proposed to attach to the defense committee, can be formed.

SECTION II—*Army council.*

1. In section 1 of our report we have made recommendation with regard to the defense committee to which we attach extreme importance. The focusing of the higher policy of the defense of the Empire can, in our opinion, be vested only in this committee over which the prime minister presides. We can conceive no other means of providing the cabinet with the information and advice with regard to the general preparations for war, which are at all times required to be maintained or which may at any moment be needed to meet special circumstances unexpectedly arising, and of watching naval and military expenditure so as to insure that it is consistent with the conditions which His Majesty's Government may desire to enforce.

2. We have, therefore, after full consideration come to the conclusion that our wisest course was to deal first with the supreme direction of the national policy of defense, then to report upon the superior administration of the war office, and later to make specific recommendations as to the details of distribution of duties and of responsibilities between the heads of branches.

3. At the outset of our inquiry it was necessary to decide whether formal evidence should be taken. After discussion, we determined that it was undesirable to add to the enormous volume of evidence already available. We consequently decided to take counsel with all the high officials, military and civil, whose views and experience could throw light upon our investigations, but not to record their evidence. We have thus obtained expressions of opinion, given with complete freedom, which have been of great value to us in forming the conclusions embodied in our report.

4. We are directed by the terms of our reference to take the admiralty system of higher administration as the basis of our action, and we are convinced that while there may be imperfections in the working of the system, it is absolutely sound in principle. It has been handed down without material change from the period of the great naval wars. It may be said to have been founded on the proved requirements of war,

and although it has not been in recent times put to the supreme test, it has smoothly and successfully met new demands as they have arisen, including an enormous increase of personnel and matériel. It conforms closely to the arrangements under which the largest private industries are conducted. Finally, it has retained the confidence of the navy and of the nation.

5. This can not be said of the war office, where great changes have been frequent, and stability of administration has never obtained. The complex system which prevailed at the time of the Crimean campaign broke down completely under the stress of war after bringing the nation to the verge of disaster. The changes which followed were important, and in some respects beneficial. The conception of a war office for dealing with the whole business of the army dates from 1855, but a dual system involving great disadvantages prevailed until 1870. Subsequent changes of greater or less moment were introduced by successive secretaries of state, and have been traced in some detail by the various bodies that have reported upon the war office. We do not propose to recapitulate these changes. It suffices to state that no public department has been so frequently examined or so scathingly criticised by commissions and committees as the war office.

6. Since the partial reconstruction, effected with a view to remedy the evils rendered obvious by the experience of the Crimea, there has been nothing of the nature of organic change in the system of war-office administration. Some of the recommendations of the numerous inquiring bodies have, from time to time, been selected for acceptance, without any due regard to the necessary drawbacks of dealing with administrative reform in piecemeal fashion; but when, in 1890, the Hartington commission urged a drastic measure of reorganization nothing was done. It has followed that the war office has been subjected to successive tinkering processes, by which improvements in minor matters may have occasionally been accomplished, but which left great principles entirely out of sight.

Meanwhile, during a period of immunity from real stress, when the provision of relatively small expeditionary forces to operate against unorganized and ill-armed peoples has been the principal occupation of the war office, apart from its multifarious duties of purely peace routine, primary needs have escaped due recognition. The experience of the South African campaign has clearly shown that the system of administration prevailing was not adapted to the requirements of war, and an examination of the methods and regulations of the war office strengthens the impression that the real object for which this department of state exists, the preparation of the military forces of the Crown for war, has not been attained.

8. The relations of the secretary of state to the military heads of the war office are not such as to enable him to discharge his duties to the best advantage. The centralization of a vast number of incongruous functions in the commander in chief results in the neglect of work of primary importance. The war office, as pointed out by the Hartington commission, has no thinking department, and the branches concerned with preparations for a campaign and with the collection of necessary information are weak and not sufficiently in touch with the secretary of state. At the same time the duties and responsibilities of the military heads are ill defined, and their relations to each other and to the secretary of state are not such as effective administration demands. No distinction between policy and routine work exists, and the military heads absorbed in work with which they ought to have nothing to do, have no time for the proper consideration of the question of real importance, or for exercising foresight and initiative. Leaving out of consideration numerous minor flaws in the machine, the above conditions alone fully suffice to account for evils ramifying through the whole structure of the army and rendering it inefficient for war. No scheme of reconstruction can be worthy of the acceptance of His Majesty's Government unless it provides substantial and permanent guarantees against the continuance of these conditions.

9. The Hartington commission stated (par. 82) that "the complete responsibilty to Parliament and the country of the secretary of state for the discipline as well as for the administration of the army must now be accepted as definitely established." At the same time it was premised that in practice "the responsibility of the secretary of state appears to be

still in some aspects less real than that of the first lord of the Admiralty." It is now clear from the evidence given before the war commission that real power has been divorced from responsibility, with results injurious to the military advisers of the secretary of state and fatal to his authority with his colleagues in the cabinet.

10. We consider that as a first step in the reconstruction of the war office the position of the secretary of state should be placed on precisely the same footing as that of the first lord of the Admiralty, and that all submissions to the Crown in regard to military questions should be made by him alone.

11. The next step is the constitution of a board, or, as we prefer to call it, an "army council," following the general principles which obtain at the Admiralty.

12. The council should consist of 7 members—4 military and 3 civil—with the permanent undersecretary as secretary.

13. We reserve for further investigation and thought the distribution in precise detail of the duties of the council.

14. We attach great importance to a scientific grouping of these duties, and we propose in a future section of our report to deal with the subdivision of work under directors of sections subordinate to the members of the council, and to make other recommendations in regard to matters affecting the military administration. We shall further make recommendations for developing and extending the principle of decentralization by the transfer of certain functions from the war office to the executive commanders of the army. We believe, however, that it is essential that a council should be constituted with the least possible delay. We understand that the principle has been definitely accepted by His Majesty's Government, and we urge that immediate action to this end should be taken. It is necessary for the further prosecution of our work that the members of the new army council should be appointed forthwith to enable us to consult with them in regard to the further proposals which we have under consideration.

15. Speaking broadly, the distribution of duties must be as follows:

a. Secretary of state.

b. First military member: Military policy in all its branches, war staff duties, intelligence, mobilization, plans of operations, training, military history, higher education, war regulations.

c. Second military member: Recruiting, pay, discipline, rewards, peace regulations.

d. Third military member: Supply, clothing, remounts, transport.

e. Fourth military member: Armaments and fortifications.

f. Civil member, the parliamentary under secretary of state: Civil business other than finance.

g. Civil member, the financial secretary: Finance, audit, accounting, estimates.

16. Or, summarizing, the grouping would be:

a. Minister responsible to the Crown and to Parliament.

b. Operation of war.

c. Personnel.

d. Supply.

e. Armament.

f. Civil business.

g. Finance.

17. New measures demand new men, and we therefore attach special importance to the immediate appointment of military members who have not hitherto been closely connected with existing methods, and are therefore not likely to be embarrassed by the traditions of a system which is to be radically changed. Fresh minds will thus be brought to bear upon the work of the council, and the new principles of administration will be smoothly inaugurated. Failing this action, which could not be regarded as conveying any possible reflection upon the distinguished generals now holding high offices, we see no hope that the reconstitution of the war office will be a reality.

18. It was recognized, both by the Hartington commission, and by the members of the war commission who signed the minority report, that the high office of commander in chief, as hitherto defined, is inconsistent with the principle of the administration of the army by the secretary of state and a board of council. Attempts to combine the executive and administrative functions of the army have led to confusion, to reduplication of work, to expense, to dual control, to divided responsibility, and ultimately to the condition revealed

n the evidence taken before the royal commission on the South African war. As an executive commander of an army scattered over Great Britain and Ireland, over Europe and Africa, such an officer is an anomaly, and by the light of experience a mistake. On the other hand, a general officer commanding in Ireland or South Africa, in the Mediterranean, at Aldershot, or in Scotland, has a position clearly defined, to which the duties and functions of an executive officer can be properly assigned for the exercise of effective action.

The sphere of the commander in chief as at present understood is far too wide, while for administrative purposes he may be sometimes not the most efficient and sometimes too fine an instrument. In order to secure effective control a commander should be in constant touch with the units of his command. Owing to the wide extent of the King's dominions, this necessary condition can not be fulfilled by a commander in chief, and even in Germany—a homogeneous empire—executive command in time of peace has been completely decentralized. We therefore consider that it is imperative to abolish the office of commander in chief, which was only revived as late as 1887, and we urge the divorce of administration from executive command and the decentralization of the latter.

19. Theoretically, the commander in chief was held to be the inspecting officer of the military forces of the Crown, but the duty could not be performed by reason of the vast number of administrative functions concentrated upon that officer. If the conditions which obtained before the South African war had been brought to the knowledge of the secretary of state and the cabinet on the high authority of an experienced general officer, known to be independent of the administrative work of the war department, and especially charged with the duty of reporting on actual facts, many evils could have been averted. A measured report upon facts by one who was not concerned with administration must carry more weight than the conflicting demands, and sometimes the conflicting statements of those engaged in the art of persuading financial authorities in the war office and at the treasury to increase the total of the estimates. We shall hereafter recommend the appointment of an inspector-general, whose sole function would be to report upon actual facts without expressing

opinions upon policy, and who should therefore be located outside the war office. He should be appointed by the Crown, on the recommendation of the secretary of state, and his appointment should be for 5 years.

20. The other high offices which would disappear under the proposed reconstruction are those of the inspector-general of fortifications and of the military secretary. The duties of the first will be combined with those of the armaments branch. We shall later make detailed proposals for dealing with the functions now exercised by the military secretary.

21. We also defer to a later stage our recommendations regarding the important questions affecting the relations between the auxiliary forces and the war office.

22. In appointing the members of the army council no consideration except that of special fitness for the duties involved should arise. It will not be necessary to appoint an officer of his rank who has shown capacity for field command to a purely administrative office, such as *d* or *e*, nor need there be a bar to the appointment of an officer of any rank to any post at the war office if he possesses the necessary qualifications, experience, and intellectual capacity. We consider that the question of military rank can be allowed to remain in abeyance among members of the council. They will have official titles and fixed salaries during their period of office, and they will be practically in the position of lords of the admiralty. This would have the advantage that any member of the council could afterwards revert to any post outside the war office suitable to his military rank without, as now, being restricted to a few appointments of the highest class.

23. While we are strongly of opinion that immense improvement can be effected in the war office and in the army by reconstructing the administrative machine on sound principles, we are well aware that the personal qualifications of the individual members of the council must be factors of great importance. Men of exceptional ability can obtain fair results from a bad system, but under a good system personal shortcomings produce the minimum of disadvantage, and they are, moreover, easily detected. It is of the essence of a bad system that mediocrity or worse is effectively shielded.

24. The appointment of the military members of the army council should follow exactly the long-established practice of

the Admiralty. The selection of the military subordinates in each branch should be made by the secretary of state upon the sole recommendation of a responsible member of the council.

25. With regard to the legal aspects of the constitution of the army council, we have received a memorandum prepared by the parliamentary counsel, which makes it clear that this council can be "constituted under the prerogative by letters patent," the distribution of business being subsequently provided for by order in council. The terms of the war office patent could follow those of the Admiralty patent, *mutatis mutandis.* It may hereafter be necessary to obtain statutory authority for the transfer to the army council of the powers now vested in the secretary of state by virtue of statutory enactments.

26. As already stated, we are convinced that the first step in reconstruction should be taken forthwith by constituting the new council.

SECTION III.—*Inspection.*

1. The reconstruction of the war office and the readjustment of its relations with the army demand a large measure of decentralization. Many existing evils can be traced directly to the attempt to perform in the central office duties which should be delegated to the executive commanders of the army at home and abroad. It results that these details are frequently ill discharged from want of adequate knowledge; that there is too much correspondence of a useless and sometimes irritating nature, and that executive officers, nursed by the officials of the war office in peace, are not accustomed to or trained for the duties which they must perform in war. Striking instances of these evils have come to our notice. We conceive that, as pointed out in section 1 of our report, it is the essence of the task intrusted to us to frame our proposals with a single eye to the needs of war, and from this point of view we are convinced of the absolute necessity for decentralization.

2. Partial steps in this direction have been taken in connection with the establishment of army corps commands. Much more is required, however, and we shall in a future section indicate in detail the powers which the executive

commanders of the army should wield in time of peace in order, on the one hand, that the war office may be relieved from functions which it does not and can not properly discharge, and, on the other hand, that the officers of the army may be trained to exercise initiative and to accept responsibility.

3. We assume at this stage of our inquiry that the executive command of the army in the United Kingdom will be vested in general officers selected for their fitness for command in the field, and administering in peace time the forces quartered in defined territorial areas. Following the naval analogy, and on other grounds, we are strongly of opinion that these high officers should be entitled "general officers commanding in chief." The military functions which must be exercised by the general officer commanding at Aldershot, as in Ireland, are far more extensive than those of the governor of Malta, and infinitely more important than those of the governor of Bermuda. Proximity to the war office appears to be no ground for withholding in the one case the title accorded to the other. Portsmouth is nearer to the Admiralty than Dublin to the war office, but this has not been considered a valid reason for curtailing the title or weakening the power of the naval commander in chief at Portsmouth, who is placed practically in the same position as the Admiral commanding in the Mediterranean or on the China station. We are convinced that the adoption of the higher title in the case of the army would facilitate the transfer from the war office to the territorial commands of the new powers which we shall propose to confer upon them, and would mark the reality of the necessary decentralization.

4. Independent inspection is the corollary of effective decentralization. We have already pointed out (sec. 2) that the commander in chief is in theory the inspecting officer of the military forces of the Crown, and that this most important duty is not performed.

5. The constitution of the army council as the supreme administrating body of the military forces and the measures of decentralization, which are a necessary consequence, will render effective inspection absolutely imperative. The army council is to administer and not to command the army, executive command being invested in generals outside the war

office, who will be responsible for the training and efficiency of all troops within their districts. An independent inspection department must be provided for the information and protection of the council.

6. An inspector-general of forces should therefore be appointed for a period of 5 years, who should command and direct the various inspectors.

7. It may be objected that the appointment of this high officer might derogate from the influence and authority of the executive commanders. We can not accept this view for the following reasons: (*a*) An inspector-general of the forces already exists in the person of the commander in chief, who has been prevented by the nature of his office from discharging the duties; (*b*) inspectors-general of cavalry, of garrison artillery, and of engineers already exist, and have not been found to clash with army corps commanders; (*c*) the system of independent inspection is of long standing in Germany, where it has proved a most important guaranty of efficiency and has not been found to interfere with the many responsibilities and the large powers devolving upon the army corps commanders.

8. Again, it may be said that the inspection department would tend to grow into a bureaucracy, or to develop into a revived horse guards. We desire to emphasize the fact that these tendencies are impossible, as the functions of the inspector-general will be clearly defined by order in council, and he will be responsible and subject to the army council.

9. It is our purpose to avoid the considerations of details until we have laid down and secured the acceptance of great principles. We shall, therefore, defer to a future section of our report the discussion of the precise personnel of the department of the inspector-general of the forces. The objects, the general duties, the principal subordinate officers, and the relations of the inspector-general to the war office, can, however, be stated at once.

10. The main object sought is to provide the secretary of state and council with eyes and ears other than those of the administrative heads of the war office, who can not have time or opportunity for inspection.

11. The duties of the inspector-general should, therefore, be those of review and of report upon the practical results of

the policy of the army council within the financial limits laid down by the cabinet. His field of action would cover the United Kingdom and those portions of the Empire where troops under the control of the home government are stationed. He must form a judgment, either personally or through his staff, as the army council may direct, on the efficiency of officers and men, on the handling of troops, on the standard and system of training, on the suitability of equipment, and generally on all that affects the readiness of the forces for war.

12. As pointed out in section 2 of our report (par. 19) the sole function of an inspector-general "would be to report upon actual facts without expressing opinions upon policy."

13. Directly under the inspector-general, as part of his staff, should be inspectors of cavalry, horse and field artillery, garrison artillery, engineers, mounted infantry. We do not propose the appointment of subordinate inspectors of infantry, who have not been found necessary in Germany.

14. The inspector-general should attend or be represented at all maneuvers or considerable reviews of troops. He should act as chief umpire at large maneuvers, thus avoiding the need of depriving an executive officer of an opportunity for practice in the duties of high command.

15. He should prepare a careful annual report to the secretary of state and council by November 1, in order that when the estimates for the coming financial year are under discussion the army council may have the advantage of considering the facts disclosed by his independent inspection.

16. The annual report should be divided into heads corresponding to the distribution of duties among the members of the army council.

17. The inspector-general should enter his opinions upon the confidential reports of all commanding officers, and may report on any officer.

18. A selection board should be created, composed of general officers commanding in chief, which should make recommendations to the secretary of state and the army council for all promotions and appointments of officers above the rank of captain, with the exception of officers of the general staff, who shall, as in Germany, be centrally supervised and administered. This is a point to which we shall later draw attention. We

understand that the present selection board has done its work well, and has merited the confidence of the army, but we consider it should be entirely outside the war office. We are of opinion that the inspector-general should be a member and president of the new selection board. The promotion board should be abolished.

Following the system adopted in sections 1 and 2 of our report we now submit all that we consider necessary, in order that a decision should be taken in regard to the principles of the constitution of an inspection department. If these principles are accepted we strongly urge that an inspector-general, with whom we can confer as to details, should be appointed immediately.

PART II.

The Right Hon. A. J. Balfour, M. P.

Sir: The proposals made by us in Part I of our report having been approved by His Majesty's Government, and the army council being constituted by patent, we have now, in section 1 of Part II, laid down the principles by which, in our opinion, the proceedings of the army council should be governed. If these principles are accepted, we suggest that they should be formulated at once by an order of council.

In Section II we have dealt with the question of the decentralization of work and administration. Up to the present time no consistent and serious effort has been made to grapple with the congestion of work at the war office. Whatever may have been the intention when the army corps system was devised, in point of fact administration is as much centralized in the war department to-day as it was ten years ago. The sporadic growths of small financial branches at the headquarters of three of the army corps accentuate rather than diminish the centralization in the war office of civilian control over military policy and administration.

We have made proposals for dealing with this serious evil which lies at the root of military inefficiency. To these proposals we attach vital importance, and we are firmly convinced that no internal reform of war office organization can be permanent and effective which is not based upon a sound system of decentralization.

It is therefore to the "major-generals" commanding the eight administrative districts, into which we have divided the United Kingdom, that we look to relieve congestion at the war office and to inculcate sound administrative conceptions into the government of the army by soldiers, which is the keystone of the policy we have laid down.

In Section III we have drawn attention to the results of overcentralization, which have led gradually to the control of military policy by the civilian branches of the office, and we have proposed effective remedies.

We desire to repeat that the criticism of military policy by civilians, whose functions should be limited to examination of estimated cost and expenditure, has become a habit, incurable unless drastic reforms are applied.

Our proposals under this head resolve themselves into—

(*a*) A complete redistribution of financial work and responsibility.

(*b*) Further decentralization of accounting and financial assistance under the military chiefs.

(*c*) Separation of army accounts and army finance.

(*d*) The creation of a consolidated and homogeneous body, trained in accounting work, to replace the present dual system.

(*e*) A large simplification and reduction of regulations.

(*f*) A change of personnel, in order to mark emphatically a complete change of system.

To the last-named proposal (*f*) we attach the greatest importance, as nothing which we can suggest will so fully convince the rank and file of the finance branch that the old system must be abandoned and completely new habits formed.

Unless, therefore, His Majesty's Government accept the proposals contained in Sections II and III, our labors will have been in vain, and the reforms already carried out will bear no fruit.

In Section IV we have urged the formation of a trained general staff for the army, and we have defined the functions of the first military member of the army council.

As this is a fundamental change in the military system of the country and a new departure in our military history, we have thought it desirable to lay down fully and clearly the duties of the general staff and their distribution at army headquarters.

Time will be required before a body of officers can be trained to fulfill adequately the responsibilities of a general staff, but careful selection among the material already existing should enable the first military member to create a staff which would render impossible the state of things disclosed by the inquiry of the war commission, and should insure in the future thoughtful and organized preparation for war.

We have, in Section V, explained at some length the manner in which "promotion" and "selection" should be dealt with. To complete the task intrusted to us we have to deal with the division of work and of responsibilities between the various other members of the army council. We shall embody this branch of the subject of reconstitution in Part III of our report.

Taking the two parts of our report now completed, we venture to claim that we have clearly laid down the great principles of reform which lie at the root of the reconstitution of the war office, which was assigned as our duty.

For the first time in the long annals of war office reform, its intricate problems have, we believe, been approached from the point of view of war rather than from those of peace. The scheme we have laid before you is based upon the consideration that the preparation for war is the primary object of a war office, and that no military organization can be sound in time of peace unless it is applicable to the necessities of war.

Bearing this principle constantly in mind, we have proposed—

(*a*) A permanent nucleus for the defense committee, in order to insure the continuous consideration of defense problems, and to coordinate the naval and military forces of the Crown. We regard this proposal as the keystone of the whole structure of reform.

(*b*) An army council for the higher administration of the army.

(*c*) The creation of a trained general staff, which is one of the most pressing military needs.

(*d*) Divorce of administrative from executive military functions.

(*e*) Complete decentralization of administrative work.

(*f*) A thorough system of inspection.

(*g*) Financial changes, in the interest of sound economy, and increased responsibility of the military administrators of the army.

(*h*) Division of duties within the war office, to prevent overlapping, to minimize reduplication of effort, and to insure the smooth and rapid dispatch of business.

(*i*) A number of subsidiary changes of system, conceived with a view to increase the authority and responsibility of the soldier, with a view to the higher efficiency of the army.

(*j*) A change of personnel, in order to bring new minds to bear upon new measures.

We believe that our report contains all that is required for the purpose of making clear to you the principles upon which we lay stress.

Of the whole of Part I, His Majesty's Government have already approved, and we strongly urge the acceptance of the proposals now laid before you in Part II, in order that they may forthwith be put into operation.

Part III of our report, which deals with the organization of the branches of the war office, other than that of the chief of the staff, with the position of the army medical services, and with other matters of importance, will shortly be ready for submission.

We desire it to be clearly understood that our scheme of reform has been conceived and elaborated as a whole, and that any interference with the principles on which it is based would necessarily destroy its benefits.

* * * * *

We remain, your obedient servants,

ESHER.
J. A. FISHER.
G. S. CLARKE.

G. F. ELLISON, *Secretary.*
FEBRUARY 26, 1904.

SECTION I.—*The army council.*

His Majesty's Government, having approved of the establishment of an army council, and having appointed the members, we consider that it is desirable to explain in general terms their duties and responsibilities.

2. One of the principal objects we have kept in view is to prevent the crystallization in the war office of narrow habits of thought, or of obsolete methods. This object can best be achieved by a constant infusion of new blood into the main arteries of the administrative branches of the office. We urge, therefore, that four years should be the maximum period during which an officer can hold the position of a military member of the army council. He should then return to active employment on the staff, or in command, for at least one year before he is reemployed in the office. The military members of the army council should realize that the changes which they propose, and the rules which they devise, will affect themselves as well as others, and that they will profit or suffer according as their administration is prudent or unwise.

3. We urge strongly that this rule of sending back officers to active employment for one year after four years should be enforced throughout the military staff of the war office. This is the only method by which constant touch can be maintained between the administrator and the administered, and effective sympathy established between the war office and the army. The period of four years, which has been laid down for certain commands, should, as far as possible, be made universal.

4. The members of the army council will act in a dual capacity (*a*) as colleagues of the secretary of state at the council table, and (*b*) as superintendents of the several branches into which the business of the war office will be divided.

5. The responsibility of the secretary of state to Parliament and to the country for the administration of the military forces will in no sense be diminished, but it will be shared by the members of the council.

6. The council will decide all questions of military policy, and all important questions affecting more than a single branch of the war office.

7. The decisions taken will stand, and executive orders will be issued in the name of the council as a whole. It thus be-

comes the duty of any military member or members of the council who may dissent from a decision taken either to resign office, or to accept a share of responsibility for the action involved. While, therefore, loyalty to the service should prevent any member from retaining office if what he considers a vital principle of policy is contravened, loyalty to colleagues will prevent the opinions of individual members from becoming known outside the council room. The dissent of any member who does not thereupon resign is, by that fact, annulled, and he must accept his share of the consequent responsibillity.

8. The main duties of members as superintendents of branches will be:

(*a*) To take any action entailed by decisions of the council.

(*b*) To give decisions not requiring the authority of the council.

(*c*) To bring before the council any important questions which may arise in connection with the work of their branches and may require decision by superior authority.

9. Members of the council will be responsible for the efficient working of their branches, and in order that responsibility may not be divorced from power, they will have full control over the personnel acting under their orders.

10. When a change of personnel is necessary or desirable, it will be made by the members of council concerned after personal consultation with any other member whose branch may be affected.

11. Each military member of council will administer a specific vote or votes of the army estimates, and each branch will be provided with a civil finance section charged with the work of accounting and of furnishing such financial advice as the member may require. The two great providing branches under the third and fourth military members will each be equipped with a contract or buying section, whose head may be civil or military. All contracts above a certain amount will be independently registered and reviewed by the financial secretary.

12. It is essential to prevent the members of the council from becoming immersed in detailed administration. They can not be experts in the entire work of their branches, and they should superintend rather than directly administer.

13. The main administrative work of the military branches will, therefore, be carried out by directors acting under the members of council, who must be intrusted with large powers. Broadly speaking, questions of policy will be decided by the council or by the individual member concerned, while administration will devolve upon the directors. At the present time the branch of military intelligence and mobilization is divided into four sections, each under an assistant quartermaster-general. In future the work of this branch, which is to be considerably increased, will be grouped under three directors. And throughout the readjustment of the business of the war office the object has been to secure such a grouping of duties as can—at least in course of time—be administered by directors or heads of sections possessing expert knowledge. We attach extreme importance to the selection of such officers, which must be made solely on the ground of special qualifications for the discharge of their several duties.

14. Communications between the secretary of state and the military members of council and between the latter will be mainly personal. Long minutes passing between them can not be necessary, and may lead, as now, to a confusion of ideas. Personal conference between members is specially necessary before questions come before the council. At present it may and does happen that questions are submitted to the secretary of state for decision under a misapprehension of facts. In such a case, either a wrong decision is given, or the secretary of state may have to send the papers back to their starting point in order to obtain some essential information, by which process much delay may be caused. Similarly, personal conference between directors must be frequent and sufficient to clear up any points in doubt before papers come before the members or the council, and regular meetings held once a fortnight would be a great advantage. We are informed that the practice of indiscriminate minute writing has been mitigated in recent years; but our investigation has clearly shown that useless minuting is still widely prevalent. This is an evil which is fatal to effective administration, and we are convinced that it can and must be suppressed.

15. The machinery which we have proposed will render the "army board" unnecessary. When, however, operations in the field are imminent it is essential to focus the require-

ments of the expeditionary force, and by superseding all discussion on paper, to enable instant executive action to be taken for the provision of any special equipment or stores required. This important object will be secured by daily meetings of directors, leaving the army council free for the consideration of larger questions.

16. In the absence of a member of the council, his duties must be performed by another member.

17. Directors can not represent members in council; but they and any of the officials of the war office may at any time be called to give information which the council may require.

18. Each member of council will require a private secretary, who may be military or civil at his discretion.

19. The present permanent under secretary will, under the arrangements approved by His Majesty's Government, become the secretary of the council. This will involve a considerable change in his duties, which will be assimilated to those of the secretary of the admiralty, and we consider that, whenever a fresh appointment is made, the title of the office should be "secretary of the war office."

20. Cases at present occur in which letters emanating from a branch of the war office are not seen or are even not approved by its head. This is a practice which must be stopped. Every letter so issuing, except those dealing with matters of routine, should be seen and initialed by the member of council concerned.

21. We urge that the above proposals should be approved as a general basis to enable rules of procedure, which will be required immediately, to be framed:

SECTION II.—*Decentralization.*

No proposals for the reconstitution of the war office can lead to permanent improvement in administration unless they include a large and real measure of decentralization.

2. The business which requires to be transacted with smoothness and dispatch has increased enormously in volume and complication. In 1871, army estimates amounted to £12,975,000; in the present financial year, the total sum administered is £34,500,000. During this period the number and the complexity of the requirements of the military forces and the strength of the latter have also grown immensely.

3. It is not too much to say that there has been no serious attempt to grapple with the vast increase of business by the introduction of improved methods. As pointed out in Part I, Section I, section 6 of our report, "there has been nothing of the nature of organic change in the system of war office administration" since the partial reconstruction effected as a result of the painful experiences of the Crimean war. The personnel of this department of state has been largely expanded; the system remains, and the result has been congestion on the one hand and overwork entailing neglect of, or mistakes in, dealing with questions of policy on the other hand.

4. In accordance with the proposals of the Dawkins committee, increased powers have been conferred upon army corps commanders, but we are informed that, in consequence of the restrictions imposed, the decentralization thus effected has been more apparent than real. At least it seems clear that the war office has been little if at all relieved, and its personnel has not only not been reduced, but still tends to increase.

5. The natural results of an inordinately centralized system have been the destruction of initiative throughout the army. Officers have been brought up in peace time to refer everything to superior authority and to shun the responsibility of taking action. Remarkable instances of the prevailing reluctance to assume responsibility in regard to trivial matters have come to our notice. The army is tied and bound in the toils of excessively complex and minute regulations drawn up without any regard to the essential requirements of modern war and needing expert interpretation.

6. It seems to have been expected that officers would be able to emancipate themselves from the effects of their peace training as soon as they took the field. Such expectations could not be realized, and while in many cases the difficulty of suddenly assuming an unaccustomed independence of thought and action has naturally manifested itself, there have been other cases in which the abrupt breakdown of regulations held sacred in peace time has led in war to the adoption of improvised methods less orderly than is desirable.

7. We are absolutely convinced that if the army is to be trained to exercise the initiative and the independence of judg-

ment, which are essential in the field, its peace administration must be effectively decentralized. The object should be to encourage the assumption of responsibility as far as possible.

8. Administrative decentralization can be carried out in two ways:

(*a*) Accepting the army corps system as the basis, large powers might be conferred upon general officers commanding in chief, thus extending the process already partially inaugurated.

(*b*) Administrative districts might be formed, serving, but to a great extent independent of, the grouping of the forces for training purposes.

9. The first course has the grave disadvantage that the time of the general officers commanding in chief and of the large staffs which must be provided for them would be engrossed with routine business. And since such business, involving paper work on a large scale, would inexorably claim attention, the training of the troops would, as experience has proved, infallibly suffer. A further disadvantage would arise from the fact that mobilization and the dispatch of expeditionary forces would disorganize or destroy the administrative machine which would still be required. Thus, as happened in 1899, confusion would supervene, and improvised arrangements, necessarily inefficient, would need to be hurriedly devised.

10. We strongly hold that the training and preparation of His Majesty's forces for war should be the first and, as far as possible, the undivided duty of general officers commanding in chief. We therefore unhesitatingly reject the first of these alternatives.

11. After careful consideration we are convinced that effective decentralization as well as the effective training of the troops demand the establishment of administrative districts to which a large portion of the business of the war office can be delegated. We see no other means of securing the adequate preparation of the army for war and at the same time of providing for the uninterrupted discharge of services which are necessary alike in peace and in war and which are now centralized in an overburdened war office. Further, the division between the administrator on the lines of communication and the troop leader, which we propose to

establish, is essential in the field and ought therefore to be a cardinal principle in our peace system.

12. The plan which we propose involves no dislocation of existing arrangements and lends itself to any reorganization of the army which may hereafter be undertaken.

13. We shall not enter upon questions of organization, beyond stating our firm opinion that an army corps should be made complete by bringing a division at Salisbury under the Aldershot command and that additional mobilizations should be by divisions or brigades only. We see no object in attempting to organize additional army corps which, in no reasonably probable circumstances, could be required or used as such, if they ever existed otherwise than on paper. On the other hand, we consider that the whole of the cavalry and infantry in the United Kingdom should be brigaded, which has not yet been arranged. Even the first army corps lacks brigadiers.

14. In any case, as we point out (sec. 12), the plan which we urge is independent of the form which the organization of the army may assume. It will, however, enable brigadiers to be provided without increase of expense.

15. We take the territorial arrangement of regiments established in 1873 as the basis of our scheme, and we shall show how, for the first time, the territorial principle can be made a reality.

16. Each of the existing "regimental districts" is as a rule commanded by a full colonel, the scope of whose duties is not proportionate to his rank. Each depot requires a separate pay office to provide for the pay of the reservists; but here also the work is not commensurate with the establishment. The total number of full colonels commanding regimental districts is 60; the total number of depots is 69. There is thus an evident waste of administrative force which can be turned to account under proper arrangements.

17. The existing regimental districts should be grouped by fours into "brigade districts," each commanded by a colonel. This will give 19 brigade districts. The brigade districts should be grouped into seven administrative "districts," each commanded by a major-general. Thus England will be divided for administrative purposes into five territorial commands, embracing approximately equal populations. Scotland and

Ireland complete the scheme. London should form an administrative district apart from the territorial divisions.

18. We do not propose to interfere with the existing infantry depots, which could remain under the command of a regimental officer and could be used for recruiting and mobilization purposes if so required.

19. Each brigade district will have a record office for the custody of all the personal documents of the units belonging to it, and wherever a unit is quartered in the United Kingdom, direct correspondence on all matters of personnel will be maintained between it and its brigade district. The settlement of pay accounts will, therefore, take place in the brigade district to which the unit belongs, and the combatant officers will be relieved of their present financial responsibilities. At the same time, both the war office and the battalion orderly room will be relieved of a mass of routine work.

20. Units of other arms will have record offices in the administrative districts, discharging the same duties as those performed in the brigade district offices for the territorialized infantry. This will necessitate the application of the territorial principle to the other arms, which would be a great advantage. At present, cavalry documents to the number of about 25,000 are all kept at 41 Pall Mall, while more than 59,000 artillery documents are centralized at Woolwich.

21. All questions of personnel (other than officers) and of recruiting being dealt with in the infantry brigade district offices, and in the territorial record offices of the other arms, the higher duties of administration will devolve upon the major-generals commanding districts, who will deal with—

Mobilization arrangements.
Rifle ranges and training grounds. Maintenance.
Barracks. Construction and maintenance.
Lands. Administration.
Supply.
Transport, local.
Remounts. Purchase.
Hospitals.
Stores.
Posting of officers.
Appointment of adjutants and quartermasters.

22. Each major-general commanding a district will have a civil branch supplied from the war office to keep the accounts

of the district, to provide such financial advice as he may require, and to assist in framing his annual estimates.

23. The staff of the major-generals commanding districts will be administrative only, and will be representative of the second and third military members of the army council, the distinction between these staffs and the general or operations staff—a distinction which we consider essential—being thus emphasized.

24. Provision having been made for decentralization on strictly territorial lines, large powers must be conferred upon the major-generals commanding, who within broad limits must decide all questions on their own responsibility. The result would be to relieve the war office, and especially the adjutant-general's office, which was described in evidence given before the Dawkins committee as "hopelessly disorganized," of a vast amount of business which they can not now effectively transact. At the same time the officers of the army would be gradually trained to take responsibilities and to act on their own initiative, so as to become qualified for the duties which they must perform in the field.

25. Turning to the command and training of the troops, the unit for cavalry and infantry would be the brigade, and the brigadiers would be responsible for the training and discipline of their commands, whether assembled at a single station in peace time or not. Similar principles must be applied to the artillery, the organization of which greatly needs a higher grouping than that of three batteries. As regards the engineers, a scheme of decentralization has already been drawn up, which is in full harmony with our proposals. To the brigading of the troops in peace time we attach special importance as the basis of any higher organization which may ultimately be adopted. The brigadiers should, in peace, exercise precisely the same powers, disciplinary and otherwise, as must fall to them in war.

26. The coordination of training and command with administration must devolve upon the general officers commanding in chief, of whom there should be five, viz:

Aldershot and Salisbury—The army corps.
1. Northern.
2. Eastern.
3. Western.
4. Ireland.

The Aldershot-Salisbury command, being that of the first expeditionary force, is not territorialized. As pointed out in section 17, London will form a separate command for administrative purposes. Each of the commands includes two administrative districts, except Ireland, which includes one district.

27. As stated in section 10, the primary duty of the generals commanding in chief will be the training and preparation of the regular and auxiliary forces for war. The discipline of all officers serving in the command, including the power of convening and confirming the sentences of general courts-martial, will be vested in them. They will also deal with the promotions, transfers, and retirements of regular officers up to the rank of major of the units territorialized in the districts under their supervision, and of all officers of the auxiliary forces in their command.

28. The relations of the generals commanding in-chief to the major-generals commanding districts will be supervisory only, except as regards the questions relating to officers above stated. Questions of policy, such as the sites of new barracks and the purchase or hiring of large areas of land for training purposes or for rifle ranges, should be dealt with by the general officers commanding in chief. The policy having been settled, the functions of the district commander would begin. The latter will be responsible for the working of the administrative services referred to in section 21; but the general officer commanding in chief will be the supreme authority in any disputed question. The relations between the general commanding in chief and the district commander will thus be analogous to those which obtain at Portsmouth and Devonport, where there are naval commanders in chief and also admirals charged with administrative duties.

29. In Section II, Part I, of our report, we have sharply divided the duties of the military members of the army council. Under the decentralization scheme, this division will be carried down throughout the whole structure of the army in peace as in war. Thus the composition and size of the staffs of the several generals will be governed by the nature and extent of their respective duties, and the confusion of staff functions which now exists will cease.

30. Although the scheme proposed has not been worked out in complete detail, we are in a position to state that no

ncrease of expenditure is involved. The substitution of one colonel as brigade district commander for four or five regimental district commanders of the rank of colonel, together with the considerable economy which will be effected by reducing the number of pay offices, will provide savings sufficient to supply the much-needed brigadiers and the additional staffs. As compared with the completion of the original scheme for creating six army corps, there should be a large reduction of cost.

31. The general advantages which will result from the adoption of our proposals are:

(*a*) The training of the troops for war will be rendered efficient, being intrusted to officers specially qualified and not liable to become absorbed in work of a totally different kind.

(*b*) Similarly, the purely administrative duties, both in peace and in war, can be vested in commanders and staff officers who have special aptitudes of this nature.

(*c*) Decentralization will for the first time become a reality, and officers will be trained to habits of initiative, and to the ready assumption of responsibilities.

(*d*) The war office will be relieved from a mass of work which it is not well fitted to discharge, and its principal officers will be able to find time to consider questions of policy, and to promote military progress.

(*e*) Combatant officers of units will no longer be burdened by questions of accounts, and will be able to give their undivided energies to training.

(*f*) The supervision of such vitally important work as recruiting will be rendered far more effective than at present.

(*g*) In place of sending trivial complaints and communications to the war office, the public will learn to address the local commanders.

32. Our main object has been to establish a system in peace which has its exact analogue in war; which will train officers in peace for their war duties; and which will provide machinery that can not become disorganized on the dispatch of troops for service abroad.

33. Having drawn the general outlines of our scheme, and having stated the principles which we regard as essential, we most strongly urge that the executive measures required should be worked out in detail by a committee of three selected

officers, with the assistance of a qualified representative of the finance branch. It should be possible by these means to make a commencement in establishing the scheme within a month.

SECTION III.—*Military finance.*

1. The question of finance lies at the root of war office administration. Upon the proper adjustment of responsibility between the spending and the accounting branches must depend alike the efficiency of the military forces and the safeguarding of the interests of the taxpayers.

2. Having given careful attention to this most important subject, we have no hesitation in reporting that the present arrangements are, to the last degree, unsatisfactory. They do not conduce to economy in peace; they directly promote waste in war; they tend, at all times, to combine the maximum of friction with the minimum of efficiency.

3. The entire system of war office finance, which has been built up during many years and has its origin in a distant past, is based upon the assumption that all military officers are necessarily spendthrifts and that their actions must be controlled in gross and in detail by civilians. This theory is largely responsible for the unreadiness for war which has been frequently exhibited, as well as for reckless and wasteful expenditure.

* * * * *

6. And, further, the war office papers teem with minutes proving that the clerks of the finance branch freely express their opinions on matters of military policy. This, which is a natural result of the dominant theory, has the effect of destroying the responsibility of the military heads of the war office, of confusing the administration, and of delaying action. The power of finding available funds when a policy is favored and of suggesting financial difficulties in other cases is one which, in our opinion, should certainly not be wielded by the accountant-general's branch.

7. Large economies can be effected only by—

(*a*) The adoption of sound policy at the initial stage; or

(*b*) The exercise of special care in the actual disbursement.

By insuring a rigid adherence to elaborate regulations the finance department doubtless effects small savings, but it does not and can not secure real economy.

8. The theory that military officers of all ranks are, by the act of wearing uniform, shorn of all business instincts has nevitably tended to produce the laxity which it is supposed o prevent. When money is doled out in compartments and no discretion as to allocation is permitted, savings are not likely to accrue. In the cases, however, in which some measure of financial responsibility has been accorded to military officers, as in funds granted for maneuvers and in the provision of supplies in the military districts, marked regard for economy has been manifested. There can be no doubt that in proportion as officers are accustomed to financial responsibilities the economy, which they alone can secure, will be effected.

9. While the present system of financial control is futile in peace, it is ruinous in war. Officers unaccustomed to bear any financial responsibility and ruled by excessively complex regulations can not at once improvise a system for the control of expenditure in the field when the restraints are suddenly removed. The result, as in South Africa, is the waste of millions.

10. After careful consideration we have come to the conclusion that no branch of the war office more urgently needs radical reform than that of the accountant-general.

11. We propose, therefore, to go back to first principles, to define the proper duties and responsibilities of a finance branch, and to show how the requirements of the war office in this respect can be adequately fulfilled.

* * * * *

21. In Part II, Section II, of our report we have laid stress upon the necessity of imposing financial powers and responsibilities upon military officers, and we have stated our firm opinion that by this manner alone can real economy, in peace and in war, be secured. To enable military officers to exercise this responsibility they will require financial advisers, who must be supplied by a specially trained and homogeneous body apart from the army.

* * * * *

26. We are convinced that military accounting work, as well as the cash payments, should be in the hands of a specially trained branch separate from the army, and that a chief accountant being necessary, the members of this body must be his officers. We also consider that the accounting branch

should be in the closest possible touch with the life of the army, and that the divorce between the civil element of the war office and the finance work which it affects to supervise has been productive of much evil. Experience has proved that the presence of a trained financial staff in the field is a necessity. The reorganized branch must, therefore, be available for service in all parts of the Empire.

27. The fulfillment of the above conditions is, in our opinion, vital to the reconstitution of the war office.

28. It is necessary to amalgamate the army pay department with the present accountant-general's branch, grading the new body as chief accountants, accountants, deputy accountants, assistant accountants, deputy assistant accountants, or some similar titles, with a subordinate section of writers. Officers of the existing pay department would retain their military titles.

29. The consolidated army finance department should be recruited by special competitive examinations of young men from 18 to 20 years of age. On joining the department there should be a probationary period partly spent at an outstation in the United Kingdom.

30. We do not propose altogether to exclude officers of the combatant branches from the army finance department, but they should enter at not more than 26 years of age, and should undergo a searching examination, followed by a probationary period.

31. Promotion should be by selection throughout the department.

32. The general duties of the army finance department would be to keep the accounts of the army, to supervise the receipts and disbursements of all moneys, to examine the expenditure for clothing, arms, equipment, animals, and matériel generally, to assist in framing estimates, to give such advice as may be required, and to make such periodic returns as are needed to enable the financial secretary to watch expenditure.

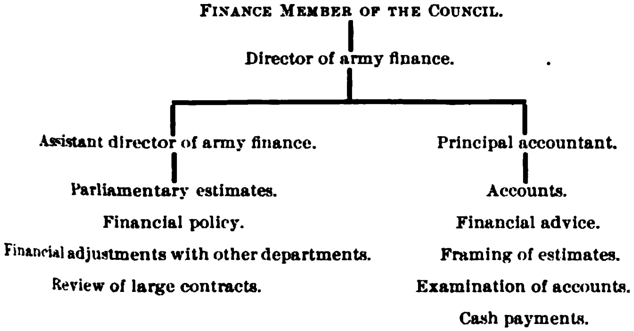
33. The department will furnish sections to the spending branches at the war office, to the eight administrative districts into which we propose to divide the United Kingdom, to foreign stations, to pay offices, and to expeditionary forces in the field.

34. The heads of sections thus detached will be responsible for advice, for estimates, and for the accuracy of the account keeping. Subject to the control of the army council, the military members of the council will be responsible for the administration of their respective votes, and similar responsibility will be vested in general officers for the administration of all sums allocated to their respective commands.

35. Following the principles we urge as regards the military branches, the personnel of this new department will be administered by a "director army finance" through a "principal accountant."

36. In addition there should be a small expert branch under an "assistant director of army finance" dealing with the annual estimates, financial policy generally, the adjustment of accounts with other departments of state, and the review of the larger contracts.

37. The general arrangements are roughly shown in diagram form below.


FINANCE MEMBER OF THE COUNCIL.
Director of army finance.
Assistant director of army finance.
Parliamentary estimates.
Financial policy.
Financial adjustments with other departments.
Review of large contracts.
Principal accountant.
Accounts.
Financial advice.
Framing of estimates.
Examination of accounts.
Cash payments.

39. We strongly urge that steps should at once be taken to form the "army finance department" on the lines we have laid down, and we believe that a reduction of the present cost of the two bodies dealing with questions of accounts can be effected by the amalgamation which we propose. We are convinced that by keeping the new finance branch strictly within the limits we have laid down, by throwing financial responsibility upon general officers as we have advocated, and by a sweeping reduction of the present regulations, large economies will result, and that the general administration of the war office as an agency for the transaction of business

will be vastly improved. At the same time the new machinery will be able to prevent such an excessive waste of public money as occurred in South Africa, to which attention was drawn by the public accounts committee in their reports of 1902 and 1903.

40. We have pointed out (sec. 20) that organic change must necessarily follow upon the creation of an army council. Much more is needed, however, and it is unreasonable to expect that the civil branch of the war office, however capable and devoted its members, will easily adapt itself to conditions radically differing from those which have grown into an established and an ingrained tradition. Changes of personnel will, therefore, as in the military branches, be essential, and we strongly urge immediate steps should be taken to apply the principles we have laid down.

SECTION IV.—*The Chief of the General Staff.*

Experience has proved the urgent necessity for a complete reorganization of the staff of the army.

2. Several causes have contributed to the destruction of the system built up to meet the requirements of the peninsular war. Meanwhile the complexity of modern armies, the difficulty of handling troops on a large scale, and the need for careful training and preparation in peace time have vastly increased.

3. Before the close of the peninsular war the quartermaster-general's department had assumed the functions of an operations staff. Its influence had become powerful, and the number of officers it employed greatly exceeded those engaged in carrying on the duties of the adjutant-general's department.

4. A long peace, by inducing oblivion of the requirements of war, inevitably tends to exalt the functions of the adjutant-general. Moreover, during a period throughout which military education and military training in every sense were consistently neglected, there was little or no work which an operations staff could undertake. Thus, in 1816, there were at army headquarters 11 officers of the quartermaster-general's and 5 of the adjutant-general's branch; while, fifty years later, these numbers were actually reversed.

5. In 1854, when war was imminent, there seem to have been some attempts to revive the system created in the peninsula, and the instructions issued in Spain to officers of the

quartermaster-general's department were officially republished for guidance. No highly trained operations staff existed, however, and such a body could not be called into being at the outset of war by a reprint of instructions.

6. In the Queen's Regulations of 1868 it was laid down that the adjutant-general's branch should be the channel through which all orders were issued to the troops, and the functions of the quartermaster-general were thus for the first time officially subordinated to those of the adjutant-general.

7. In Prussia, after the peace of 1815, the general staff suffered decay; but the events of the years 1848–1850 led to the complete reconstruction, over which Von Moltke presided. The results were strikingly apparent in 1866 and in 1870–71.

8. In this country, where the events of the latter years produced a strong, if temporary, impression, while the holding of large maneuvers in 1872 disclosed many defects, the duties of the quartermaster-general's branch were redefined in the Queen's Regulations of 1873.

9. Internal conditions at the war office appear to have militated against the maintenance of an operations staff, and in the confusion of administrative ideas which prevailed peace arrangements regained predominance. In 1888 the existence of the quartermaster-general's department as an integral part of the operations staff of the army was destroyed. Henceforth the quartermaster-general, as explained by the late commander in chief to the royal commission on the war in South Africa, became a director of supplies and transport. The most important duties of an operations staff were not assigned to any branch of the army, and seem to have been forgotten.

10. In 1873 an intelligence branch of the quartermaster-general's department was formed for the collection and collation of military information; but no step in the direction of creating a general staff was taken. In 1887 the titles of the officers of the intelligence branch were changed to those of adjutant-general.

11. In 1886 a mobilization section was established under the director of military intelligence, to draw up schemes for placing the army on a war footing. This section was, in 1888, absorbed into the adjutant-general's department. In 1895 a further change was made by bringing the mobilization section directly under the commander in chief.

12. In 1901 the intelligence branch and the mobilization section, carrying with it some work which properly belonged to the adjutant-general's department, was brought under a director-general of military intelligence and mobilization, who was made a member of the war office council and of the defense committee.

13. While, therefore, the great powers of Europe were seeking to perfect their general staffs, the arrangements at the war office provided only for the collection of intelligence and for the preparation of plans of mobilization, the branches concerned being passed from one high official to another in accordance with the views which prevailed at the moment.

14. When the South African war broke out, the mobilization scheme was so well advanced that the equipping and the transport to the ports of embarkation of successive units was smoothly carried out. Not only, however, was there no trained general staff, but some of the most important duties of such a staff were not assigned to any body of officers. At this time "drill and military training," combined with such incongruous subjects as cooking, school of music, and sergeants' messes, were dealt with by a small section under two officers.

15. We have no hesitation in stating that such conditions gravely prejudiced the conduct of operations in South Africa. and we therefore attach extreme importance to the constitution of a general staff with defined functions in peace and in war, educated for its special duties, drawing to itself the pick of the brains of the army, and working continuously to improve the training of the troops and the standard of their preparations for war. To create such a staff will require time, and we strongly urge that the necessary steps should be taken forthwith.

16. A general staff, as the term is understood in all well-organized armies, consists of a department which devotes its undivided attention to military problems in the widest sense, and of a body of officers occupied in peace in the training of all ranks of the army and prepared to direct operations in the field.

17. We have in Part I, section 1 of our report assigned certain duties of a general staff to the defense committee of the cabinet, presided over by the prime minister, and equipped with a small professional secretariat. These duties, which are

of vital importance, relate to the coordination of imperial questions jointly affecting the admiralty, war office, and other departments of state. As we have pointed out, there are no other means for dealing with such questions under the existing constitution.

18. In accordance with our recommendations, a chief of the general staff of the army has been appointed, who, being free from all executive duties and those of peace routine, will be able to supervise the training and preparation of the army for war, and to study military schemes, offensive and defensive.

19. We have roughly defined the duties of the chief of the general staff's branch as those relating to "operations of war." We now show in the appended diagram the organization of the branch under three directors, with specific duties, viz:

(*a*) Director of military operations.

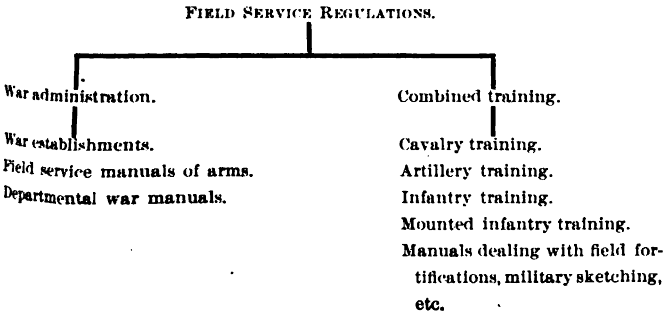
(*b*) Director of staff duties.

(*c*) Director of military training.

This arrangement of duties has, after much consideration, appeared to us to be the best, but it is clear that the closest touch between the work of the three sections must be maintained.

20. A general work setting forth the accepted principles as regards the training of the forces for, and their administration in, war, is essential. The "Field Service Regulations," of which a part has already been published, with the title "Combined training," constitute a step in the direction of meeting this requirement. The portion dealing with "war administration" is, at present, mainly in proof form.

21. There are other books which need to be kept in closest touch with the Field Service Regulations, as indicated below in the form of a diagram:


FIELD SERVICE REGULATIONS.
War administration.
Combined training.
War establishments.
Field service manuals of arms.
Departmental war manuals.
Cavalry training.
Artillery training.
Infantry training.
Mounted infantry training.
Manuals dealing with field fortifications, military sketching, etc.

22. The preparation and revision of such works
sarily be undertaken in different branches of the
by committees; but their coordination and the a
for publication should be undertaken in the br
chief of the general staff. We have assigned t
the director of staff duties.

23. Table I, attached, shows the general distrib
subjects which we propose for the branch of the c
general staff.

24. We consider it essential that the branch of t
the general staff employed at the war office should n
a sedentary bureau. The chief of the general sta
director of military training should be present a
maneuvers, and as many of the officers as possible
employed in umpiring, or in general-staff duties.
employed in intelligence work should be detaile
work to forces operating in the countries they hav
and should in peace time become personally acquai
those countries. During a war of any considerab
tude some of the duties of the branch will remain
ance, setting free officers for staff employ.

25. The branch of the chief of the general staff a
office must also be turned to account for the educ
general staff officers, as well as for the training of th
With this object officers selected by the commandan
staff college should be attached to the branch.

26. There is at the present time a great lack of infor
as regards technical military progress in other countrie
officer of royal artillery and of the royal army medical
should, therefore, be attached to the section of the di
of military operations which deals with intelligence
should be the duty of these officers to supply the bran
the master-general of the ordnance and the director-ge
of army medical services with information in regard to
developments of armaments or of military hygiene, and t
officers should be enabled to travel for this purpose w
necessary.

27. The general staff should be recruited mainly from
staff college, entry to which should, as now, be by comp
tive examination. Nominations should be in the hands of t
chief of the general staff. As a condition of admission to t

ministration of the general staff. Telegraphs and signaling.

or of military training.

ar.

King-

es in

Instruction and training of forces in United Kingdom.

Maneuvers in United Kingdom.

Concentration for maneuvers.

Allocation of funds for maneuvers and training.

Instruction in and the appointment of the higher staffs at schools of training (other than gymnasia, and schools of cooking and music).

Telegraphs and signaling.

examination, officers should, after recommendation by commanding officers, or by a general officer commanding in chief, be attached for at least three months on probation to the general staff. The responsibility involved in making recommendations should be impressed upon general and commanding officers. As a general principle, continuous employment on the general staff should be restricted to four years, and should, in all cases, qualify an officer for accelerated promotion. The titles of officers during the periods of their staff employ should be "colonel, lieutenant-colonel," etc., "of the general staff." The present misapplication of the title "colonel on the staff" should cease. Distinctions of uniform in peace and badges clearly marking general staff officers in war are essential. The entire administration and distribution of the general staff, whether at the war office or in the commands, should rest with the chief of the general staff, who should, however, in making selections, meet the wishes of general officers commanding in chief as far as possible.

28. We have stated our conviction that the formation of a highly trained general staff is essential. We have indicated the steps necessary to attain this object, and we have defined the duties. Some increase of expense will be entailed by the formation of a properly trained general staff on the lines which we have laid down. The influence of such a general staff as we contemplate will make itself felt throughout the whole structure of the army, and the necessary expense will be amply justified. We believe that by no other means can the standard of training and of preparation of the military forces of the Crown be made to correspond with modern requirements.

29. The process must need several years before the great object can be fully attained; but the laxity and confusion in staff arrangements which have long prevailed, and the neglect of adequate provision for the discharge of important duties to which we draw attention have already cost the nation heavy sacrifices. It would be dangerous to delay the necessary reforms, and we strongly urge that regulations for the general staff should at once be framed on the principles we have laid.

SECTION V.—*Promotion and selection of officers.*

1. For practical purposes promotion has hitherto been dealt with by (*a*) the selection and the promotion board and (*b*) the military secretary's branch. The former deal with promotion and selection of all superior officers, including regiment and battalion commanders, but excluding the military heads of the war office and general officers commanding in chief. The latter arranges promotions up to and including the appointment of second in command.

2. We have recommended (Pt. I, Sec. III, sec. 18) that the promotion board should be abolished and that the selection board should be reconstituted, with the inspector-general of the forces as president and the general officers commanding in chief as members. A military secretary to the secretary of state should be appointed to act as secretary to this board, which would meet periodically, three members to form a quorum. When the selection of cavalry, artillery, or engineer officers is involved, the respective inspectors of these arms should be present. The secretary would be charged with the custody of all confidential reports on officers above the rank of captain. His duties would be to prepare papers for the selection board and to forward its decisions to the secretary of state.

4. The total number of cases considered by the selection board in 1903 were 340, and the number of sittings held was 18. These numbers will be considerably reduced in future, since, as pointed out in Section II, section 24, of the first part of our report, "the selection of the military subordinates in each branch should be made by the secretary of state upon the sole recommendation of the responsible members of council." This principle must be carried down through the whole chain of officers (both at the war office and in the commands) supervised by the respective members of council, whose responsibilities can thus, and thus only, be rendered as complete as effective administration demands.

5. Promotions and appointments dealt with by the selection board as described in section 1, but including the appointment of second in command, should be gazetted on the first day in every third month, beginning with January 1.

6. We have further recommended (Pt. I, Sec. II, sec. 20) hat the office of military secretary, as at present constituted, hould be abolished. This office has hitherto dealt with what have been mainly formal and routine promotions and absorptions. Such promotions and absorptions in a normal year number about 3,211. Many of them are decided by the deputy military secretary, who refers in some cases to the military secretary, who may occasionally consult the commander in chief. Promotion lists having been thus settled, the military secretary forwards them to the King for approval and subsequently causes them to be gazetted. The military secretary also keeps lists of applicants for special employment of various kinds and nominates officers for such duties. In 1903 the number of such applications was 1,773, and of selections 541. He was formerly charged in addition with duties connected with the military colleges. Such duties, which were to a great extent intermixed with those of the adjutant-general, have, with the exception of the appointment of instructors, been withdrawn from this office in recent years.

7. We have made recommendations as regards the training of officers and the appointment of instructors at the military colleges in Section IV, which deals with the duties of the chief of the general staff.

8. We now strongly urge that the functions of the late military secretary's office should be in part decentralized. With a view to enhance the position and responsibilities of the general officers commanding in chief, and in order to emphasize the territorial principle, the promotion of all infantry officers, up to and including the rank of major, should be transferred to the command to which the territorial regiments belong. It may happen that no battalion of the territorial regiment is serving within the command. In such a case we consider that the general officer commanding in chief would be quite as well able to make recommendations as the military secretary.

9. It will, however, be necessary that selections for special employment of junior officers should be made at the war office. Duplicate copies of the confidential reports of officers up to the rank of captain must, therefore, be made in the office of

the general officer commanding in chief and one copy must be forwarded to the military secretary to the secretary of state. As these reports are now very short, this should present no difficulty. Similarly, it will be necessary that vacancies, wherever occurring, should be reported to the headquarter office of the district to which the battalion belongs territorially.

10. Minor promotions in the guards should be made by the general officer commanding the London district.

11. Promotions made as in sections 8 and 10 should be reported to the military secretary to the secretary of state for submission to the King and subsequent gazetting.

12. Minor promotions in the cavalry, artillery, and engineers should be made as at present, pending the adoption of the scheme of territorial decentralization which we have proposed in Section II.

13. It has recently been decided that the confidential reports on officers may contain recommendations for accelerated promotion. This must apparently be intended as a first step in the direction of selection in the lower ranks. Nothing, however, has been laid down to indicate how this policy is to be applied in practice, and if selection is to be made a reality, some action is required.

14. We therefore urge that the territorial regiments should be arranged in groups of about eight battalions, and that officers considered deserving of accelerated promotion should have the option of accepting it in any battalion of the group. By this means the principle of selection could be applied at once, and at the same time greater elasticity in promotion could be attained.

15. We assume that the double-battalion system as part of the organization of the infantry will be abolished as regards the training and supply of drafts for service abroad.

16. We consider, however, that the territorial titles, the assimilation of uniform and the common lists for officers' promotion, which possess certain advantages, need not be disturbed. . On the other hand, we see no reason why the battalions, when unlinked for the purposes of mutual supply of drafts, should not resume their old numbers as their first titles. Thus the connection between the regiments and the finest pages in the history of the British army would be rees-

blished, and, at the same time, the great convenience of the umbers—in war time more especially—would be regained.

17. The functions of the military secretary to the secretary f state and to the selection board would include—

(*a*) The submission of the decisions of the selection board o the secretary of state, together with the subsequent subissions to the King.

(*b*) The preparation for submission to the King of the ppointments and promotions recommended by the general fficers commanding in chief.

(*c*) The submission to the secretary of state of recommendaions by military members of council as to appointments in heir several branches.

(*d*) Submission of names of junior officers selected for special employment.

(*e*) First appointment of officers. Preparation of lists for the gazette.

(*f*) Conveying communications between the secretary of state and the military members of the army council, thus avoiding paper correspondence.

18. We have now made provision for dealing with promotions and appointments, except those of the several staffs, which will be dealt with by the respective military members of the army council. Our recommendations involve—

(*a*) The reconstitution of the selection board.

(*b*) The transference of some of the functions of the military secretary's branch to the general officers commanding in chief.

(*c*) The appointment of a military secretary to the secretary of state and to act also as secretary to the selection board.

We urge that these steps should be taken without delay.

19. Lastly, in connection with the question of promotion, we desire to emphasize the allegiance of British officers to the King as the head of the army. We are, therefore, strongly of opinion that the custom of holding levees by persons other than the Sovereign, and His Majesty's representatives abroad, should cease, and that, in future, no levee should be held except by Royal command.

PART III.

The Right Hon. A. J. Balfour, M. P.

Sir: We have noted with satisfaction the statement in Pa liament by the secretary of state for war, that His Majesty Government will in all probability "accept en bloc" ou recommendations. As we have ventured to point out. it i our scheme as a whole which we desire to lay before you under the firm conviction that, loyally worked, the machiner we have devised will be found to succeed, whereas "interference with the principles on which it is based will necessaril destroy its benefits."

There appears to be some misconception of the lines o which we have proceeded.

Part I contained the principles of the changes we advocate Part I has received the approval of His Majesty's Government, and the whole of Part I, with the exception of the formation of the small secretariat for the defense committee, ha already become operative.

Part II contained five sections, three of which involved no new principles, but consisted of details worked out for the completion of the scheme already accepted by His Majesty's Government.

Two sections of Part II laid down proposals which were novel in character, the second section dealing with "decentralization," and the third section dealing with "military finance."

The secretary of state and the members of the army council, as well as the treasury, had been fully apprised by us of these proposals, and we have every reason to believe that they have received their acceptance.

In these circumstances, we beg to present Part III, which contains no new principle, but is descriptive and explanatory of the nature and the duties of offices already created by the act of His Majesty's Government, of principles already accepted, and of a scheme already become operative.

The sections of Part III, dealing with the duties of the several branches of the war office, have in every case been drawn up in consultation with the head of the branch concerned.

We have been concerned to notice in some quarters a forgetfulness of the circumstances under which your committee was appointed.

The report of the war commission revealed a condition of affairs which outraged public feeling throughout the Empire. A remedy was suggested in the minority report of the commission, and to your committee was intrusted the specific duty of advising upon the means of applying the remedy in question.

This duty we have endeavored to fulfill in such a manner as to uproot a system, which had been scathingly condenmed by the Hartington commission as long ago as 1890, and which is directly responsible for the want of preparation for war, and the subsequent breakdown in the winter of 1899, exposed in the evidence before the South African war commission. We unhesitatingly assert that if the recommendations of the majority of the Hartington commission had not been ignored, the country would have been saved the loss of many thousands of lives, and of many millions of pounds, subsequently sacrificed in the South African war.

Upon many material points we have done no more than adopt and develop the principles laid down by the Hartington commission, especially as regards the creation of the branch of a chief of the general staff.

We are of opinion that the plan proposed in our report for dealing with military finance will conduce to economy and the saving of public money.

Further, we are convinced that in spite of a necessary and most desirable increase in the cost of the branch under the chief of the general staff our proposals will lead to a reduction of expenditure on the administration of the army.

We wish once more to urge the vital importance to the Empire of maintaining the continuity of the work of the defense committee.

We have before indicated our view of the incalculable value of the work of that committee, due to the initiative and resource of the prime minister. We suggest that, with few exceptions, none of your predecessors since 1815 was qualified by aptitude or inclination to undertake this special duty.

And it is on this ground that we continue to urge the appointment of a "permanent nucleus" or "secretariat" of salaried officers, paid under a special vote, which will give Parliament annually the right to inquire whether the wo of correlating and coordinating naval and military defe schemes has been performed.

Hitherto Parliament has been precluded from discussi these questions on the navy and army estimates, and the sult has been inflated estimates and wasteful expenditure.

We show in diagram form (Table A attached) the propo system of dealing with questions of imperial defense.

Table B shows at a glance the similarity between the miralty and the reconstituted war office system of admir tration.

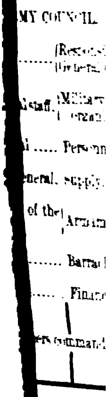
We are unable to conclude without expressing our de obligation to the secretary of state for war, whose clear well-defined ideas of the real needs of the army have been the greatest assistance, and without whose warm suppo cordially given to us, we should have been unable to bri our labors to a satisfactory conclusion.

Finally, we venture to address to you our thanks for great consideration which you personally have shown to throughout, and it is with firm and profound belief in yo wish and power to carry into effect the proposals we have ma that we now present our final report.

We remain, your obedient servants,

ESHER.
J. A. FISHER
G. S. CLARKE

G. F. ELLISON, *Secretary.*
MARCH 9, 1904.


MY COUNCIL
Respons
General
staff. Military
organi
l ..... Personn
eneral. supply.
of the Armam
...... Barrac
...... Financ
ers command

MY COUNCIL.

.... Responsibility to the Crown and to Parliament.
General direction and supervision of all business.

l staff. Military policy and military intelligence, strategy, war organization and operations.

l ..... Personnel.

neral. Supply.

of the Armaments and fortifications.

.... Barracks and noneffective services.

.... Finance.

ers commanding in chief.

Administration.
(Major-generals commanding districts.)

g units on
ith training

my Dire

ary

the
ical E

S

g units on a
ith training

my

ary

the
ical

s.

Director of auxiliary forces.

General questions regarding the militia, yeomanry, and volunteers.

Examination of inspection reports.

Submission and gazetting appointments, promotions, and retirements of officers of auxiliary forces.

Appointments of A. D. C.'s to the King, and keeping roster for duty.

Honors and decorations for auxiliary forces.

Judge-advocate.

Military, martial, and international law.

Courts-martial.

d material to
g all military
yment in the

OF SUPPLIES AND CLOTHING.

ts con-
supply
, forage,

nain re-
ense de-

garding

All arrangements connected with the pattern, supply, and issue of clothing.

Regulations regarding the issue and storage of clothing.

DIRECTOR OF EQUIPMENT AND ORDNANCE STORES.

All arrangements connected with the supply and issue of arms, equipment, and stores to the troops.

The administration and distribution of the army ordnance department.

Maintenance of mobilization, equipment, etc., and of expense depots of stores.

Regulations regarding issue of equipment and stores.

n and inspe
Inventions
el of manu
or guns, an

ATIONS AN

ersonnel.

ands,

yal eng

yal en
ies.

mmitt

n and inspection of guns, small arms, ammunition, and royal
Inventions. Construction and maintenance of fortifications.
el of manufacturing and technical inspection staff. Adminis-
or guns, ammunition, and stores, and for works constructed

ATIONS AND WORKS.

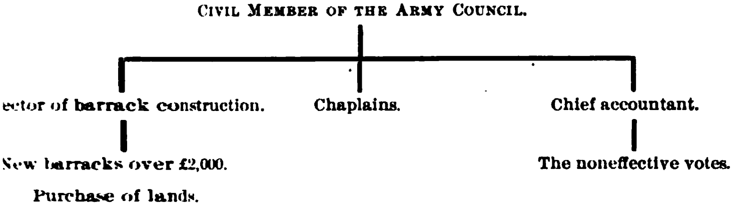
ersonnel.

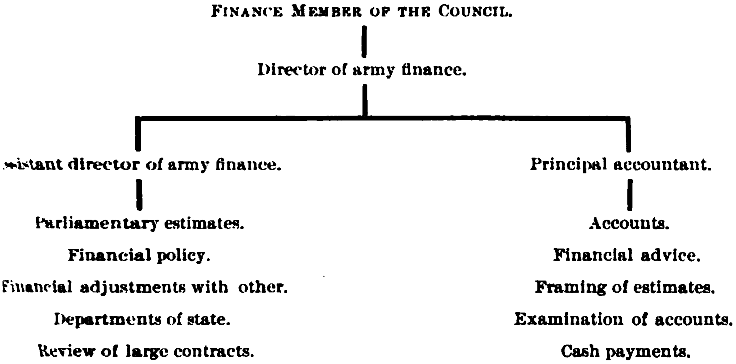
ands.

oyal engineer factories.

oyal engineer committee.

nmittees.


CIVIL MEMBER OF THE ARMY COUNCIL.
ector of barrack construction.
Chaplains.
Chief accountant.
New barracks over £2,000.
Purchase of lands.
The noneffective votes.



THE SECRETARY OF THE WAR OFFICE.

Under the scheme of reconstitution of the war office the permanent undersecretary of state will become the secretary of the army council and of the war office. We do not propose that the title should be changed in the case of the present holder of the office.

2. The main function of the secretary must be to correlate the business of the war office and to secure the harmonious action of the administrative machine as a whole.

3. There should be an assistant secretary to relieve the secretary of detail work. This appointment could only be made when the present assistant undersecretary of state relinquishes his office.

4. The following are the principal duties for the due discharge of which the secretary should be responsible:

(*a*) General control and discipline of the civil staff serving under the army council and of office arrangements. Appointments and promotions.

(*b*) Direct control of the central department, including the registry and the war office library.

(*c*) Parliamentary business.

(*d*) Issue of orders and publication of regulations other than those of a purely military character, which will be dealt with in the branch of the member of council concerned.

(*e*) Official communications with the King, with other departments of state, and with the law officers of the Crown.

(*f*) Preparation of actuarial and statistical returns of a general character and the editing of the war office list.

(*g*) Interviews and semiofficial communications on behalf of the army council.

(*h*) Communications with the press.

5. All papers intended to be brought before the army council will be sent to the secretary, who will summon and attend its meetings, keep minutes and records, and make himself acquainted with all questions which come before the council for decision.

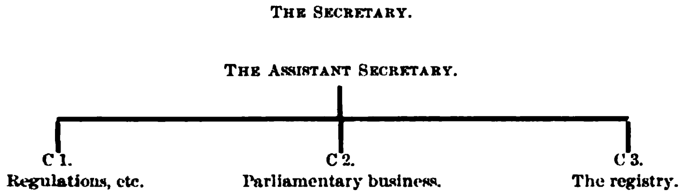
6. All letters sent from the war office in the name of the army council should bear the signature of the secretary, to whom all letters sent to the war office should be addressed.

7. Great simplification in dealing with correspondence, both inside and outside the war office, should result from the fact that the distribution of staff duties in commands and districts will, under our scheme, correspond with the division of functions between the members of the army council. Thus correspondence emanating from a branch of the war office will be dealt with by the representatives of that branch, and conversely all letters from outstations can bear such an indication that their distribution by the registry on receipt will be a matter of routine.

8. The secretary will be responsible for making such arrangements as will secure secrecy wherever necessary. The war office has for some time been notorious for the leakage of confidential matter, and recent cases have been brought to our notice showing that the present safeguards are totally insufficient.

9. The central sections will remain as at present, but we consider that the head of the registry should be directly responsible to the secretary instead of being placed under the head of C 2 section.

10. The secretariat of the war office would thus be arranged as shown in the diagram below:



Section VII.—*Committees.*

We have been struck by the very large number of committees which the war office employs. At one period there appear to have been 24 temporary committees, exclusive of those of a permanent character.

2. It seems to have become a habit to assemble a committee whenever any question arises requiring special consideration. The work of these committees occasionally overlaps. Their reports accumulate and are not adequately studied. The general result is to delay necessary action, to destroy responsibility, and to entail a large aggregate expenditure.

3. We believe that the adoption of our proposals will help to check an evil which arises mainly from administrative weakness.

4. Permanent committees in certain cases are necessary and desirable. In other cases, where specialist knowledge not available at the war office is required, the temporary association of experts with officials may be beneficial. This, however, should be exceptional, and the agency of a committee should never be resorted to as a means of evading responsibility.

5. Temporary committees, when they can not be avoided, should invariably be formed by a member of the army council or by its secretary, to whom they should severally report, and who should be responsible for the action taken on their recommendations. They should, as a rule, be appointed only to work out details, and not to formulate policy, which is the function of the army council and of its individual members.

6. The following permanent committees should be abolished, viz:

(*a*) Barracks board subcommittee.
(*b*) Committee on rifle ranges.
(*c*) Royal artillery and royal engineer works committee.
(*d*) The army sanitary committee.

7. The following committees acting under the members of council stated are required:

THE ADJUTANT-GENERAL.

(*a*) Mobilization committee, containing a representative of the chief of the general staff and of the quartermaster-general.

(*b*) Drafts committee.

THE QUARTERMASTER-GENERAL.

(*a*) War railway council.

THE MASTER-GENERAL OF THE ORDNANCE.

(*a*) Ordnance committee.
(*b*) Ordnance council.
(*c*) Explosives committee.
(*d*) Small arms committee.
(*e*) Special artillery equipment committee.
(*f*) Royal engineers committee. The size of this committee appears to be inconveniently large, and it can be greatly reduced with advantage.

THE CIVIL MEMBER OF THE COUNCIL.

The army hospitals committee formed to undertake, among other duties, that of "reporting upon all plans for new hospitals and standard plans for barracks and standing camps, and of selecting sites for new hospitals," should be brought into touch with the new works branch under the civil member. This important committee should send a civil representative to attend the army council when required.

THE SECRETARY OF THE ARMY COUNCIL.

(*a*) Army regulations committee.
(*b*) War office papers and books committee.

8. The following committees will also advise the army council on the subjects allotted to them, and will send a representative to attend the council when required.

(*a*) The army medical services advisory board, which has already done invaluable work in relation to the whole question of army hygiene, and which forms an essential link between the civil and the military medical professions.

(*b*) The nursing board.

SECTION VIII.—*The inspector-general of the forces.*

In Part I, Section III, of our report we have laid stress upon the need for effective inspection, and we have proposed the appointment of an inspector-general of the forces, with a staff of inspectors, "subject to the army council."

2. We have defined the duties of the inspector-general as "those of review and of report upon the practical results of the policy of the army council within the financial limits laid down by the cabinet." Thus he should "form a judgment, either personally or through his staff, as the army council may direct, on the efficiency of officers and men, on the handling of troops, on the standard and system of training, on the suitability of equipment, and generally on all that affects the readiness of the forces for war."

3. We have recommended that the inspector-general should act as umpire at large maneuvers, and the inspectors might be similarly employed if available.

4. The personal staff of the inspector-general should consist of—

(*a*) A colonel or lieutenant-colonel of the general staff as staff officer.

(*b*) A private secretary and 2 aids-de-camp

5. The subordinate inspectors forming the staff of the inspector-general should be—

(*a*) Inspector of cavalry.

(*b*) Inspector of horse and field artillery.

(*c*) Inspector of garrison artillery.

(*d*) Inspector of engineers.

(*e*) Inspector of ordnance and equipment stores.

Of these inspectors *a*, *c*, and *e* already exist.

6. The appointment of an inspector of mounted infantry need not be made while the present system of training sec-

tions of infantry in schools of instruction is maintained. If, however, it should be decided in future to train mounted infantry by battalions, so as to obtain the advantage of beginning a campaign with organized bodies, and in order to prevent the dislocation of units on the outbreak of war, or if any system of training were adopted other than special schools of instruction, an inspector might be required to secure uniformity of training.

7. The inspector-general and his staff should have no executive or administrative functions. They are intended "to provide the secretary of state and the army council with eyes and ears," and their reports should deal only with existing facts, pointing out defects, commenting upon efficiency, and thus enabling the governing body of the army to know the practical results of the measures it adopts. Their attention should be concentrated upon the question of the fitness or unfitness of the army for war.

8. The inspector-general will take cognizance of the auxiliary forces at large maneuvers, but we consider that the responsibility for the inspection of these forces generally should rest with the general officers commanding in chief, who, with their general staffs will, under the arrangements we propose, be able to give attention to this important duty. The divisional generals and the brigadiers, whose appointment we urge, will also be able to assist in the inspection of the auxiliary forces.

9. Turning to the several inspectors:

(*a*) The duties of the inspector of cavalry will require some change.

(*b*) The inspector of horse and field artillery should report upon the equipment of batteries, as well as upon the general efficiencies of their personnel and horses.

(*c*) The duties of the inspector of garrison artillery will require to be redefined, and he should not report upon questions of policy in defense matters or upon new projects unless so directed by the army council.

(*d*) The inspector of engineers should specially report upon the efficiency of coast defenses (works), of coast and fortress engineers, and of submarine mining arrangements generally. In some cases a joint inspection by (*c*) and (*d*) will be desirable.

(*e*) The inspector of ordnance stores and equipments should carry on his present duties unchanged. His reports, as now, should be sent to the general officers commanding concerned and duplicates to the inspector-general.

10. The inspector-general will prepare an annual report to the army council. This report should be framed in sections corresponding to the four military branches of the war office. Reports in regard to matters requiring immediate attention should be sent to the secretary of the war office.

11. All inspection reports on auxiliary forces should be forwarded by general officers commanding in chief direct to the secretary of the war office.

SECTION IX.—*The organization of staff duties in the field.*

Following the general principles which we have laid down, we show in Table V, attached, the distribution of staff duties under a general officer commanding in chief in the field.

2. The strength of the staff officers in each branch would be regulated by the size of the force employed, and by the nature of the operations to be undertaken. The line of cleavage between the duties of the several staff officers should, however, be rigorously preserved. It is essential to prevent the confusion of staff arrangements which has hitherto prevailed.

3. The creation of a general staff with specific duties in peace and in war will necessarily entail changes in present arrangements.

4. Wherever more than one general staff officer is employed, the senior will act as "chief of the general staff," controlling and correlating the work of his branch under the general officer commanding.

5. Thus a "chief staff officer" standing between the general officer and the rest of the staff, and attempting to supervise incongruous duties, will disappear. Officers employed on the general staff will have most important and difficult duties which will sufficiently tax their powers. The nature of his duties will necessarily confer a dominant position upon the chief of the general staff in the field. He should not, however, as a rule interfere with the responsibilties of the adjutant-general's and the quartermaster-general's branches.

6. The staff arrangements in peace should ex those laid down for war. The Aldershot-Salisbur comprising the army corps, and the four other co require to be strongly provided with general st On the other hand, the administrative districts wil be strong in the adjutant-general's and quartermaste branches. At stations such as Gibraltar and Mal officer of the general staff should suffice.

7. In no case, however, should a general staff employed in routine duties which have nothing to d training of troops or with the general policy of fortresses or coaling stations.

8. At present "chief staff officers" become im office duties and learn to regard a day spent away fro as wasted. It is only by concentrating the energies time of general staff officers upon training and que military policy that preparation in peace and efficie tion in war can be secured.

9. The principle of the division of training from a tration which we have sought to apply throughout our appears to us to be fundamental.

10. In Part II, Section IV, section 27 of our report w pointed out that the title "colonel on the staff," which i a confusion of ideas, should now disappear. Officers manding Royal Artillery and Royal Engineers should n staff officers of the general officer commanding in chief; as commanders of special arms, they would have direct ac to him, and would serve as his advisers when required matters affecting those arms.

11. The general officer commanding a line of communication would receive the orders of the general officer commanding in chief, through the branch of his staff immediately concerned—that of the chief of the general staff, of the adjutant-general, or of the quartermaster-general, according to circumstances. He would have under him the commandant of the base. If more than one line of communications is employed each should have its commanding officer, and in this case an "inspector-general of lines of communication," without executive functions, might be required to secure harmony of arrangements between the various lines and to prevent clashing where they become intermixed.

Director of army finance.

d

Financial advice.

Examination of accounts.

Cash payments.

p-

heral officer commanding in chief.

Civi

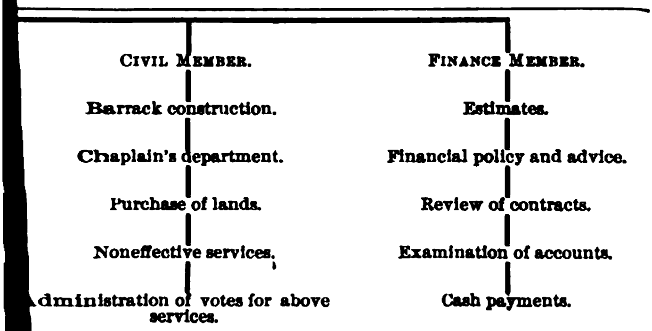
Barrack

Chaplai

Purc

Noneff

Administrati


CIVIL MEMBER.
Barrack construction.
Chaplain's department.
Purchase of lands.
Noneffective services.
Administration of votes for above services.
FINANCE MEMBER.
Estimates.
Financial policy and advice.
Review of contracts.
Examination of accounts.
Cash payments.

12. In Table VI attached we have set forth the distribution of duties at the war office, thus presenting at a glance the scheme of reconstitution which we have proposed. The correspondence between these duties and those of a headquarters staff in the field (Table V) will be evident. Each military member of the council, except the master-general of the ordnance, is directly represented in the field by officers carrying out the duties for which they have been trained in peace. The general staff deals with the direction of operations—the adjutant-general's branch with personnel, discipline, and sanitary arrangements, the quartermaster-general's branch with transport and with supplies of all kinds. There is no overlapping, and the duties of each branch are not only clearly defined, but are such as fall naturally into the grouping we have adopted. The finance member of the council is also represented in the field by a director of army finance, who, under the arrangements we propose for the reorganization of the finance branch, will have become accustomed in peace time to work with a military command.

13. The instability of the administration of the war office has in the past been felt throughout the whole fabric of the army. Changes made with little regard for principles have necessarily caused widespread distrust of our military institutions. Time will be required for the realization of the reforms which we advocate; but these reforms can be inaugurated at once without entailing any serious dislocation of existing machinery. We therefore strongly urge that the redistribution of duties should be formulated in orders in council and elaborated in the war office list and in regulations. And we consider that no further change, however small, should be introduced without the authority of the army council, given after full consideration of the principles involved and of the probable results in and outside the war office.

SECTION X.—*Conclusion.*

We have now completed the task intrusted to us, and we believe that the scheme of reconstruction which we have drawn up will be found to be based throughout upon the great principles lying at the root of effective administration and essential to the sound government of the army in peace and to due preparation of the national resources for war.

2. It has been our object to avoid details as far as possible: but to erect a strong and a well-knit fabric which can be elaborated by others. So long as the principles, which we maintain to be vital, are consistently upheld we have full confidence in the results of our labors.

3. We are, however, well aware that time is needed to create new habits of thought alike in the army and in the civil branch of the war office which must continue to play an important part in ministering to its needs. We have plainly stated our opinion that the arrangements at the war office, as disclosed by our inquiry, are unsatisfactory and inefficient to the last degree, and we consider that we should have failed in our duty if we had sought to minimize existing evils.

4. The question of the reorganization of the military forces of the Crown is one which stands outside the terms of our reference. We claim only to have devised the machinery which will enable this problem to be worthily solved, and we are convinced that efficiency and economy are unattainable until the war office has been completely reconstituted in accordance with the principles we have laid down.

5. We look to the army council, which His Majesty's Government has now established, to supply the direction and the motive power necessary to create efficiency throughout the army, and to insure smooth and orderly progress. Upon the general officers commanding in chief will rest the training of the troops, which will now become almost their sole duty. To the major-generals commanding districts we have assigned important administrative functions, upon the discharge of which in peace and in war the welfare of the army must largely depend. The inspector-general of the forces is not the superior of the general officers upon whose commands he will report, but they will learn to look to him for assistance in making their forces efficient in the widest sense of the term.

6. It has been said of Napoleon that, by the overwhelming force of his personality, he destroyed the initiative and the responsibility of his generals, discovering too late the irreparable loss which was due to his methods. The system under which the British army has been trained hitherto has produced the same result; but the genius of a Napoleon has been absent. We have, therefore, endeavored to devise a

system so completely decentralized that the sense of responsibility must in time be brought home to individuals, and that incompetence must be revealed. There can be no doubt that the lack of initiative, which can be traced directly to the defects in our military administration, was a source of weakness to our arms in South Africa.

7. If our proposals are accepted and loyally carried out, there will in time be a total change in this respect. The members of the army council will not be able to shelter themselves behind a commander in chief, or to impute to the secretary of state the responsibility for decisions of which they disapprove. They will be provided with directors having clearly defined duties, who will relieve them of details and enable them to give attention to policy. They must delegate large powers to their directors, remembering that devolution, accompanied by wise supervision, is the test of a good administrator.

8. Thus we consider that no routine papers should ever pass beyond the directors, while all questions involving principles of policy should be dealt with by the responsible member of council without reference to any other authority unless they—

(*a*) Concern some other department of the war office.

(*b*) Are of sufficient importance to justify consideration by the council.

9. In order that the council should act as such, it will not always be necessary to hold formal meetings. Many questions, which do not require general discussion, can be settled by personal interviews. It is essential to dispense with the copious minuting of papers which has hitherto prevailed and which leads to delay and to misunderstandings. If the methods of transacting business which we urge are adopted, there should be a large saving in the cost of administration.

10. By the arrangements which we propose, the reconstructed finance branch will be brought into close touch with the work of the army at home and abroad. This, coupled with the limit of four years as the period of service of military officers at headquarters, will insure that the war office has complete knowledge of the requirements of the army, knowledge in which it has hitherto been palpably lacking and which can not be derived from official papers.

11. When once the annual estimates have been settled, the members of the army council will be responsible for expenditure within the amounts voted by Parliament and will be subject to no controlling authority except the chancellor of the exchequer. Each member should, as unanimously recommended by Lord Hartington's commission, "have full control of his own votes, the estimates being so arranged as to show clearly for what sums each is responsible." While the finance member is the equal of his colleagues on the council, his subordinates are those of all other members as their subordinates are his. Departmental finance is not the master but the handmaid of administration. The financial advisers of members of council or of generals outside the war office should be responsible for advice tendered to the head of their branch. Such advice should be fully and freely given, with the object of conferring assistance, but can never take the form of criticism upon the expressed opinions of the head. In large questions—where the financial adviser may not feel able to give an opinion—the views of the director of army finance can be obtained. No subordinate officer of the Finance branch should minute a war office paper unless authorized to do so, and then only to his immediate civil or military chief. The military head of a branch will naturally ask for advice; but the responsibility for acting upon it or against it will rest with him. There is a clear distinction between the laws made by Parliament, which are unchangeable except by Parliament, and the army regulations framed by the army council and capable of amendment by that body.

12. We consider that it would be a distinct advantage if officers were rewarded for meritorious service by receiving so many years seniority, instead of by brevet rank, and if the temporary rank of brigadier were abolished except for officers on active service.

13. The acceptance of the principles which we strongly advocate must, in our opinion, steadily tend to the creation of a body of officers trained to accept individual responsibility and to act when necessary without referring everything to superior authority. At the same time we believe that we have so clearly drawn the lines between the duties of the various groups as to secure the great advantage of a scientific division of labor, which is essential in all civil business, and

which becomes more and more necessary as the work of maintaining an efficient army increases in difficulty and in complexity.

14. The defense committee, assisted by a small secretariat, will deal with questions of national defense, and will foresee imperial requirements. The general officers commanding in chief, assisted by the general staff, will be able to concentrate their energies upon the training and the preparation of the forces of the Crown for war. The major-generals in the eight districts will be able to devote themselves to administration. The inspector-general and his staff will watch over the working of the military system and bring to light its defects. Lastly, the army council, freed from routine, will find the time and the means to direct military policy, to foresee military requirements, and to frame the measures of organization the neglect of which in time of peace entails disaster or ruinously expensive improvization in war.

ESHER.
J. A. FISHER.
G. S. CLARKE.

G. F. ELLISON, *Secretary*.
MARCH 7, 1904.

THE NEW RIFLE-CARRYING EQUIPMENT.

In an article which appeared in the Army and Navy Gazette at the commencement of the late war it was shown that the mobility of the mounted forces did not depend entirely on large and speedy horses, but rather the reverse. It was remarked that celerity of movement from place to place, cover, and accuracy of fire were more readily obtained with small horses when mounting and dismounting was easy, and when the horse's paces were smooth, than with the rough gallop of the ordinary troop horse; and that with the best-trained cavalry, horses, and men, the operations of mounting and dismounting for fire on foot were such as to afford food for reflection with a view to improvement. These anticipations may fairly be said to have proved correct, both with regard to horses and particularly so with regard to mounting and dismounting with the long rifle. In fact, one of the most difficult problems to solve during the past war was that of providing the mounted soldier with some easy method of carrying the rifle, not only when in the saddle, but during the process of mounting and dismounting. The trained cavalryman, hitherto used to the carbine and its cumbersome bucket. found the long rifle no easy weapon to manipulate, and the various means which were somewhat hastily devised to assist him in its carriage, either on his back or elsewhere, were clumsy and uncomfortable. But the case with the comparatively untrained soldier was worse. Only those who have seen the yeomanry and other auxiliary troops undergoing training, almost in the face of the enemy, can realize the difficulties which had to be overcome in getting these men mounted with the long rifle, and as most of them knew little or nothing of riding, once in the saddle they were difficult to keep there, with their rifles slung from a loop on the left arm and balanced in a somewhat precarious manner from a shallow bucket on the horse's near side.

The importance, therefore, of devising some simple method of carrying the long rifle, or even the recently shortened one. can not be overestimated, for in future mounted men must form a large proportion of our army, both at home and abroad. It is, perhaps, unnecessary to labor the question of what this proportion is to be, but there is ample evidence in the war commission report that it must be larger than hitherto.

Lord Roberts has given evidence to this effect, and that the cavalry must be prepared to fight on foot much more than they have ever done before, and that there must be more mounted infantry. Sir Ian Hamilton has recorded his opinion that, compared to a modern rifle, the sword or lance can only be regarded as a mediæval toy, and that even in pursuit of thoroughly demoralized troops, which afford a special opportunity for the *arme blanche*, a trooper who merely uses his horse to keep within easy range of the enemy, and employs his magazine rifle, can by such a method do more damage. with less fatigue or danger to himself, than he could with sword or lance. This view seems to have been recently confirmed, for the successful pursuit in Somaliland by Kenna's force, when over 500 of the enemy were killed, was due to the rifle fire of his mounted men.

The subject therefore of the carriage of the rifle is one worthy of careful attention, and of probably more than it has hitherto received, for it is time to do away with the comparatively useless rifle sling for dismounted men and both the clumsy bucket and back belt for the mounted soldier. The object to be sought is that of enabling both to carry their rifles comfortably, with both hands free, if necessary, and yet to be able to mount and dismount from their horses, ponies, mules, cycles, or any other means of conveyance, with the greatest celerity and convenience. This object seems to have been attained by the invention of Lieut. Col. J. H. Patterson, D. S. O., of the Essex Imperial Yeomanry, whose rifle equipment has been on trial in the Indian army for the past year, with the result that Lord Kitchener, always quick to appreciate any such improvements, has recommended its adoption for all mounted troops in that country, and under the orders of the secretary of state for India 25,000 sets have been there dispatched. It is only to be regretted that the equipment was not supplied in time to make use of in Somaliland, where it would have been of great value with the camel corps and other mounted troops. The rifle hangs upright behind the man's left shoulder and thigh, from a slot and frog in the waist belt, muzzle upward, by means of a stud fixed to the lower band of the weapon. When mounted the weight of the arm is transferred to the horse by means of a metal spring clutch, which grips the small of the rifle butt, fixed in a leather frog attached to the near side of the saddle. That is all, but not least of the advantages of the invention are its extreme simplicity and cheapness.

This equipment is now undergoing extensive trial and report, under orders from the war office, in view to its introduction to the home service, and the general idea seems to be that from its simplicity it is wonderful how no one thought of it before. It has been in use with the South African constabulary, and some of the last-formed Imperial Yeomanry battalions were supplied with it at yeomanry expense for trial in South Africa—too late, however, to be brought into use in the field. Those who are interested in the invention can obtain detailed descriptions of it from its originator, when it will be found that it answers all the advantages claimed for it. Not only has it already attracted attention among sportsmen in all parts of the world, who have long sought a method of easily carrying their rifles and guns when mounted, but it has also been sought after by many representatives of foreign and colonial forces, who seem determined to be up to date in what has long proved the crux of the soldier's equipment.—*From the Army and Navy Gazette, April 9, 1904.*

A set of the Patterson equipments has been received and sent to the cavalry board for trial.

A NEW SIGHTING DEVICE.

Patent for a sighting device has recently been issued to Mr. A. J. Boult, of London, England. Its object is to render the image of the rear sight on the retina more clearly defined without affecting the intensity of its light.

The system of sighting is illustrated in the appended drawings. The front sight consists of the small metal mirror *a*, which is provided with the notch *b*. A plate *c* occupies the place of the ordinary backsight. Marked upon this plate is a T-shaped figure—black upon a white ground. The T-shaped mark is so situated that it is reflected in the mirror. When correctly aiming, the point of intersection *d* of the T is made to coincide with the bottom of the notch, while the target *e* appears in the center of the notch, as is illustrated in fig. 1. The incorrect method of sighting is illustrated in fig. 2.

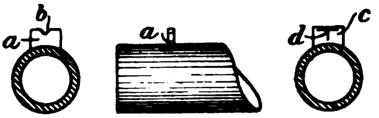
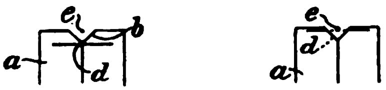


Fig. 1 *Fig. 2*



The blurred impression of the rear sight experienced with the ordinary sights is due to the fact that the eye being focussed on the target can not at the same time be focussed on the sights.

With the mirror front sight used in this device, the rear sight, or rather the T-shape mark on the rear sight, will be apparently displaced in the direction of the target by a distance equal to twice the distance between the two sights, and the image of the rear sight on the retina would be more distinct than that of the front sight.—*From Arms and Explosives, December 1, 1903.*

A NEW SMOKELESS POWDER.

Col. W. Hope has announced that after nine and a half years' continuous work, in which he has recorded over 10,000 experiments, he has produced an absolutely safe and stable smokeless powder, which he calls veloxite. He says that it contains 73 per cent more power as a propelling agent, weight for weight, than the government's present powder, yet it contains no nitrocompound, no sulphur, no phosphorous, no chlorate; in fact, no dangerous ingredients. The flashing point of black powder is at 640° F., that of cordite and all nitro powders is only from 360° to 370°, while that of veloxite is about 12,000. He says that veloxite stands the hammering of a sledge hammer on an anvil. The ingredients are stable, and, therefore, the powder is stable. The setting up of chemical action is impossible in any length of time and in any variations of climatic conditions. Veloxite can be made in the morning and fired in the afternoon, not requiring, as other powders do, several weeks to manufacture. It can be made cheaply, its ingredients can be purchased in unlimited quantities by the ton, and it is available for small arms as well as artillery.—*From the Canadian Military Gazette, January 12, 1904.*

POMPOMS IN PEACE EQUIPMENT.

Each cavalry regiment on home service is to have a pompom as part of its peace equipment. Battalions of mounted infantry are to be similarly equipped, but only on mobilization. These guns were so effective in South Africa that their adoption in our army became almost a foregone conclusion. But how strange it is that in a matter of this kind we should find ourselves copying from an army of farmers.—*From The Army and Navy Gazette, February 6, 1904.*

VARIOUS NATURES OF GUNS USED DURING THE SOUTH AFRICAN WAR.

The following is a list of guns of various natures used during the South African war:

9.45-inch B. L. howitzer.
9.2-inch B. L. gun.
6.3-inch R. M. L. howitzer.
6-inch Q. F. gun.
6-inch B. L. howitzer.
5-inch B. L. howitzer.
5-inch B. L. gun.
4.7-inch Q. F. gun (several marks with different breech fittings).
15-pounder B. L. gun (service pattern).
15-pounder B. L. gun (E. O. C. pattern single motion breech action).
15-pounder B. L. gun (E. O. C. pattern steep coned breech action).
12-pounder Q. F. gun of 12 cwt.
12-pounder Q. F. gun of 12 cwt. (on field carriages—special "Elswick Battery").
12-pounder Q. F. gun of 8 cwt.
12-pounder B. L. gun of 5 cwt. (Horse Artillery).
75 mm. Q. F. gun (Krupp).[a]
75 mm. Q. F. gun (Mamim-Nordenfelt).[a]
75 mm. B. L. gun (Krupp).[a]
9-pounder R. M. L. gun.
7-pounder R. M. L. gun.
2.5-inch R. M. L. gun.
6-pounder Q. F. gun.
3-pounder Q. F. gun.
37 mm. pompom.
37 mm. Q. F. gun (Krupp).
1-inch Nordenfelt.
0.450-inch Maxim.
0.303-inch Maxim.
0.303-inch Colt.

—*From Proceedings of Royal Artillery Institution, October, November, and December, 1903.*

ARTILLERY PROGRESS.

Artillery questions are coming more and more to the front in this country and abroad. There are constant discussions as to artillery material, and the methods to be employed by that arm of the service. In some quarters revolutionary ideas are propounded, and there is evidence of some unsettlement of military opinions. The question has been raised and hotly debated of late as to whether or not the personnel of horse and field batteries shall be armed with and instructed in the use of the rifle. The proposal does not find favor with artillery officers of the old school, who have been taught to believe that a gunner's allegiance should be given first and last to his guns, and that to depend, even in the direst extremity, upon an inferior weapon, as they deem it, is the rankest heresy. Strong opinions are, however, held to the contrary in high quarters and the authorities have, indeed, already gone to the extent of giving practical effect to the idea. The matter is still in the experimental stage, it is true, and the orders are rather permissive than peremptory; but army corps commanders are taking steps to carry out the necessary instruction.

---

[a] Captured from the enemy and taken into use.

A certain number of experts in musketry training, both officers and noncommissioned officers from infantry regiments, have been attached to every battalion in the Second Army Corps, and the only question still unsettled is how long the course of instruction shall be. It is at present thought that a month as an initial step should suffice, but the essence of the test is to find the minimum time required to constitute a qualified staff of artillerymen in each battery to perpetuate the system, always supposing the principle is to be accepted finally. For the opposition is by no means overcome, and there are those who still see no urgent necessity for providing rifles for defense at comparatively close quarters. The objection seems rather sentimental at best, and the danger is very real that the guns might be rushed when from the lay of the ground their fire can be no longer effective. That the rifles would be used at comparatively short range is, of course, obvious, and this would for a measure fix the amount of instruction to be imparted; 600 or at the most 800 yards would be the limit of practice necessary, nor would a very high standard of marksmanship be required. It will be interesting to watch developments, and note which school of thought carries the day. It is said that Lord Roberts, an old artilleryman, supports the introduction of rifles.

The progressive are putting forward another theory that may, if encouraged, produce a marked change in artillery organization. They believe that the days of the field battery are coming to an end, that as at present constituted there is a waste of power; it lacks the mobility of horse artillery, although always aspiring to it, and yet goes too fast for infantry. The remedy suggested is to convert the field into the horse battery, and to create a new branch, something superior to the type of "cow gun," as slow in movement as the march of infantry, but proportionately of much heavier caliber, and of greater range than the field guns. The experiments made at the Marlborough maneuvers with the 4.7-inch guns were interesting in this regard, and the results achieved satisfactory. Once the principle is accepted it could be carried out easily enough. The chief difficulty in the way is that of expense; it costs more to maintain a horse than a field battery, and the soundest arguments as to increased efficiency will not carry great weight in this epoch of contemplated retrenchment.—*From the Army and Navy Gazette, January 9, 1904.*

FIELD FIRING AS PRACTICED IN INDIA.

The chief difficulty in all field firing is to secure anything like reality and thus give to officers and men some idea of what would really happen in war. Great strides have been made of late years in this matter, but the larger facilities offered in India have necessarily resulted in more practical suggestions than the work carried on elsewhere. The following remarks embody the latest development of the subject in India. In the first place, field firing by small units, such as a squadron or company, is much more instructive than when carried out by larger bodies, but care should be taken that young officers, noncommissioned officers, and men should get ample individual instruction by the proper use of section groups, and even individual men during the field firing. Section, squad, and group leaders need systematic individual instruction as to how to lead their respective units across country, how to occupy a bit of ground, to estimate range, watch the effect of their fire, etc.

The first consideration in field firing is to draw up not a fictitious scheme, but one suitable to the ground, giving every leader and man an opportunity to think and act for himself, and teaching each of them individually how to approach and use cover, and how to advance or retire from cover. If schemes have to be more or less fictitious, blank and not ball cartridges should be used, keeping the ball ammunition for range work. Restricted as rifle ranges are, a number of practical exercises can be fired on them. As to their execution, most schemes are carried out far too quickly. It is not unusual to see about 2 miles of ground got over, and an imaginary enemy turned out of a position in an hour or so, which gives an entirely wrong idea of the whole thing to all concerned. The approach of the infantry of an attack on a hostile intrenched position, over open country and in open daylight, is a matter of hours, combined with making use of any existng natural cover or with throwing up artificial cover. Yet how rarely do we see intrenching tools taken out, or any attempt made to improve existing cover. It is necessary to prevent men firing a round or two at each halt and then dashing on. This can only be done by introducing pauses and delays, but these must be made use of if the exercise is to be made interesting and instructive, and not wearisome to the men. We can not afford to fire many rounds at each halt, or from behind every bit of cover gained or made, but every pause in the advance can be made use of to gain breath, reorganize units, recharge magazines, and see how reserve ammunition can be safely brought up and distributed. Each pause can also be utilized to point out any errors observed up to that point of the operations, to explain the reason of what has occurred, and to make known what the next proposed movements are to be, the reasons for them, and the method of carrying them out. Advantage can also be taken at each halt to practice judging distances, to discuss the local conditions that affect the "appearance" of the distances, to select the proper backsight elevation, and to test the results by actual firing carefully watched through field glasses.

Thus at each halt, such as must occur after each bit of ground is won, the troops can be practiced in many essential subjects—use of cover, entrenching, improvement of existing cover, reorganization of units, charging magazines, issue of reserve ammunition, judging distance, fire discipline, rifle practice, watching the effects of fire, besides necessary explanation of the reason for everything done, and to be done, and correction of errors. If this is done at each halt, it will take some days of careful work and instruction to carry out an advance over 3,000 yards up to a defended position during the hours available each day for the exercise, one day's work beginning where the last day's work ended. By this means men would get to acquire some idea of the duration of modern fights and the need for husbanding ammunition. It is not always a good thing to have no visible targets to aim at. If the object of the practice is to teach men to hit an enemy who shows himself, then targets suitable to each range must be provided. On the other hand, in some practices, targets invisible to the unassisted eye, but visible through glasses, should be made use of to train the leaders in directing the fire by such landmarks as may be available. Whenever possible such tactical considerations as mutual support, concentration of fire, changes in objective, etc., should be practiced. Another important point is that a large number of casualties of all ranks should always be made—at least 30 per cent. Supports and reserves should only be brought up for definite reasons, which should be explained, and these reasons are best seen when large casualties are made. The casualties can be collected and utilized as reinforcements, if necessary, so as not to miss any instruction. The casualty losses should be chiefly made among the men and officers who are most careless in exposing themselves in movement or behind cover. Reinforcements must advance in the same careful manner as the firing line, taking advantage of all cover and crossing exposed ground by rushes or by trickling. They must not halt in the open close behind the firing line, where they are only hit without power of returning the fire. The only thing that it is hardly possible to teach in peace time is effect of prolonged firing on the efficacy of the fire. More than one witness before the war commission commented on this, and said that the Boers admitted that the efficacy of our fire decreased as the duration of the firing was increased.

Such, briefly, is the method now being practiced in India for increasing the musketry efficiency of our troops in the field. The more perfect the tool the better skilled the workman must be, and there is no doubt but that we have now reached a stage that demands both individuality and intelligence from our men as well as their officers; and as the British officer has often to make bricks without being officially provided with the necessary materials or means, it behooves him to make the fullest use of such small opportunities as he can seize on, and what has been said above may help him in doing this to a very large extent.—*From The Army and Navy Gazette, February 6, 1904.*

WAR MATERIAL.

During the past year the gun in its unending duel with the armor plate has unmistakably scored. While the progress in resisting powers of the former has been for some time past at a standstill—a 6-inch K. C. plate, for instance, is little, if any, better now than it was three years ago—the attacking power of the gun has been very greatly increased. This is due as much, if not more, to improvements in projectiles and propellants as to progress in gun construction. As far as projectiles are concerned, the cap has now been officially adopted as far as armor-piercing shot are concerned, and its adoption in the case of armor-piercing shell is only retarded by the fact that existing designs of shell are hardly strong enough to derive benefit from it. Now, however, that this is generally recognized, it can not be long before armor-piercing shell, as well as shot, will be capped, and once this is a *fait accompli*, it is to be hoped that only two classes of projectile will be retained in the service—armor-piercing shell and high-explosive lyddite shell. Up to now the cap has only shown increased penetration at velocities of 1,800 foot-seconds and over, but it is quite on the cards that with further improvements in projectiles it will be effective at very much lower, if not at all, velocities.

The 9.2-inch gun now threatens, very seriously, at fighting ranges all thicknesses of plate from 9 inches downward. The latest mark of this gun can put A. P. shell through 6 inches of K. C. up to 30 degrees inclination at 4,000 yards. Striking directly, the 12-inch, Mark IX, could get through any waterline armor afloat at 5,000 yards, and at 30 degrees it is capable of dealing with 10.5 K. C. at 3,000 yards.

In view of this, belt armor for battle ships must inevitably be thickened. As, however, we must have very nearly reached the limit in displacement, this can only be effected by a reduction in speed or by reducing the armored area. The latter course is that which will be most probably adopted. A very excellent model for imitation in this direction is provided in the new French battle ships of the *Patrie* class, which embody the following main features: Combined belt and deck armor, 15 to 11 inches of K. C. or equivalent steel; heavy gun bases, 12 inches; side armor above belt, 8 inches; and 6 inches over the secondary-gun positions. The belt is 12½ feet in depth, which appears ample for all practical purposes. Their armament, however, is inferior to that of our latest designed battle ships. The addition of the 9.2-inch gun to the secondary armament of these latter ships is a great step in advance, and enhances their value enormously.

The 6-inch gun is useless as an armor piercer against anything over 4 inches of K. C. or similar quality armor, for. although it can get capped shot through 6 inches K. C., when striking normally with a velocity of 1,900 foot-seconds, this only corresponds to a range of 1,700 yards, and the minimum fighting range will be somewhere about 3,000 yards; moreover, the average striking angle on service will be somewhere about 30 degrees, and at this inclination the cap is of no service. It is to be hoped that the 7.5-inch gun will be mounted instead of the 6-inch gun in the new ships now about to be laid down, and also in those which will be laid down during the next financial year. In the armored-cruiser class the new *Duke of Edinburgh* and her sisters mark a notable advance—6 inches of K. C. on belt and gun positions, combined with six 9.2-inch and ten 6-inch guns, together with a speed of 22¼ knots, make up a very formidable combination of fighting qualities.

Heavy-gun sights still seem to be insufficiently protected, and it is to be hoped that this very serious defect will be remedied in future designs, when we bear in mind the paramount importance and value of the primary armament. It is satisfactory to note the steady progress which has been made during the past year in naval gunnery. The normal rate of fire from the 6-inch guns is now 5 rounds per minute, and nearly 1 round per minute can be got off from the 12 inch. There has also been a considerable improvement in the rate of hitting with the 6-inch gun. The ranges for prize firing are absurdly short, however, and we hope to see them doubled in the near future.

Before quitting the subject, notice must be taken of two remarkable types of ship which have come into prominence during the year. We mean the *Libertad* and *Vittorio Emmanuele*. The former, and her sister the *Constitucion*, have just been purchased by the Admiralty. Fast, powerfully armed, and well armored, on a moderate displacement, they are welcome additions to our naval strength. It is a pity, however, that their main armament of 10-inch breech-loading guns is not a service pattern. There was some talk of one 10-inch, rather than a pair of 9.2-inch, being mounted in the upper-deck turrets of Mr. Watts's new 18,000-ton battle ships, but we believe, and we think rightly, that the latter alternative has been decided upon.

The *Vittorio Emmanuele* and the *Reina Elena* are another remarkable design. They seem, however, almost too good to be true, and even if they succeed in attaining their designed speed we doubt their suitability for the British service, although Colonel Cuniberti has sketched for us an improved vessel of this type, of somewhat greater displacement, in this year's edition of Mr. F. T. Jane's valuable Fighting Ships.

Turning to the question of propellants, cordite M. D. is now out of the experimental stage, and with the diminished erosion which it secures we may confidently look for higher muzzle velocities than have been attained hitherto. Surprise has frequently been expressed at the high muzzle velocities which our American cousins and some private firms in this country claim for their guns. It must be born in mind, however, that to attain these high velocities either a very large charge of cordite must be employed, involving speedy erosion of the bore, or else a powder must be used which has a very much lower temperature of burning than cordite. This can undoubtedly be had with several nitrocellulose powders, but such powders are, compared with cordite, very unstable, and not suitable for the varied conditions which obtain in the British service. Cordite M. D. is a happy compromise. The percentage of nitroglycerin in the powder has been substantially reduced from 58 per cent to 30 per cent, and the temperature of burning is therefore lower, while the keeping qualities of the powder are equal to those of the original propellant.

To turn to questions which affect the land service only we seem to be at least in a fair way to obtain a really good field gun in the proposed 18-pounder. It has given the greatest satisfaction in the experimental trials during the past year, and it is to be hoped that it will before long be issued to the field artillery. The long recoil system—as in the French and Ehrhardt guns—which is essential to a real quick-firing field gun, has been approved, and a shield is also to be fitted. It is understood that the double-laying system has also been adopted, but details as to the proposed sights are not yet obtainable. All the above developments are in accordance with the most advanced continental ideas on the subject, and the gun will be a vast improvement on the 15-pounder, which, however, in spite of its many South African critics, did us very good service during the late war. Less progress seems to have been made with the new horse artillery gun, which is to be a 12-pounder or thereabouts.

It has been found difficult to keep the carriage absolutely steady during recoil, and unless this can be done no gun is worthy of the name of quick-firer, a quick-firing gun being essentially a quick-laying gun. The interrupted screw-breech mechanism is to give place to the wedge, or sliding block, and fixed ammunition will be used. The past year has also seen the adoption of a new rifle, which is to replace both the existing rifle and the carbine. It is a compromise between the two as to length, the new barrel being about 25 inches, as against 30 inches in the Lee-Enfield rifle and 21 inches in the carbine. The following points are also novel: A clip load—5 shots—a hooded bead foresight, a backsight with wind gauge, and a complete wood casing for the barrel. The muzzle velocity is rather lower, and the lands are eased off toward the muzzle. This latter innovation is in order to lessen the metallic fouling at the muzzle, and also to center the bullet better. Cordite M. D. is to be used, thereby lessening the erosion, and so giving a longer life to the barrel. In shortening the rifle to make it available for the mounted man as well as for the foot soldier, we are supported by both the United States and Japan. The new rifle has been tried and found exceedingly accurate at 500 and 600 yards, the most important ranges on service, and its rapidity of fire is very much in advance of the older arm.

In spite of the adverse criticisms from various sources with which the new arm has been assailed, it is confidently believed by those in a position to judge that it will easily justify its introduction, and that the sacrifice of a few inches of barrel and a few feet of muzzle velocity will be more than outweighed by the gain in other directions. It may be mentioned here that the difference in the maximum vertical ordinates at 500 and 1,000 yards between the old and new rifle are only 4 inches and 12 inches, respectively. The wind gauge on the backsight has only been adopted after very strenuous efforts on the part of its advocates. As an answer to the objections which some have raised as to its adoption on the ground that it is too delicate for service, it may be mentioned that 20,000 rifles with similar wind gauges were used by the United States troops in Cuba without any going wrong.

It is to be noted that the service bullet has again failed as a man stopper in Somaliland. It is devoutly to be hoped that no false sentiment will keep us from adopting an expanding bullet of some sort for all warfare of this description. The "lead pencil" is absolutely unsuitable for use against savages, and it is only a false humanity which insists on its employment.—*From The Engineer, January 1, 1904.*

MANEUVERS—1903.

It can hardly be disputed that the home maneuvers of the British army as conducted this year offer more that is valuable for the instruction and information of an American officer than those of any other country. The political, legal, and local difficulties in the way of carrying out maneuvers on a large scale in England are similar to those we have to contend with in America. The country, except for being more thickly populated and less wooded, offers exactly the same peculiarities and the terrain the same military features that we find in the farming country east of the Mississippi or west of the Sierras.

An average horseman could probably start at Calais and ride across country to Marseille without often going out of his way except to cross the rivers. There are no fences, no stone walls, except around chateaux, and few hedges. The same thing is largely true of the other continental countries. Masses of cavalry and artillery can go across country and attack or take up their positions with as much ease as infantry. Special laws insure to the military authorities during maneuvers almost complete control of the resources of these continental states. Troops are quartered on the inhabitants, barns are used for the horses, and no thought given to camping grounds or tentage.

But in England the fields are fenced with stone walls, hedges, or wire, much the same as with us. A well-mounted man can get across by picking his way, but cavalry can rarely operate in mass or move in line any more than it could in the neighborhood of Washington or Philadelphia. When a column of artillery or cavalry quits the road it must move in column through gates or across openings made practicable in the hedges, banks, or fences.

The English law does not permit soldiers to be billeted upon the inhabitants, as is done in continental states, so that all troops must go into camp or bivouac. The great inconvenience and expense necessitated by this augmentation of the trains and the need of paying for all damage done to camping grounds is only too familiar to us, and in England alone can we gain useful experience in these matters. * * *

The British maneuvers of 1903 were of unusual interest. They were on a larger scale, comprising more than two strong corps d'armée, and lasted more days than any previous similar work. The director was Lord Roberts, too well known for ability and activity, as well as through a vast experience, to require comment. The two forces were commanded, respectively, by Sir Evelyn Wood and Sir John French, while in one capacity or another such officers as Gens. Ian Hamilton, Bruce Hamilton, Baden-Powell, Gatacre, and very many others brought to bear on the maneuvers the experience of two or three years of hard field service in South Africa in command of large effectives. * * *

The most notable feature of the 1903 maneuvers as distinguishing them from American and from former English field exercises was the fact that the opposing forces did not start from a camp, go out for a day's marching and fighting, and return to the same camp at night. On the contrary, the invading force, having landed at Bristol, was supposed at the beginning of operations to have reached Corsham. At this same date the defending force (one army corps) was at Petersfield, about 75 miles northwest in a straight line, with a detached force at Burford, 75 miles north of the main force. * * *

It is to be remembered that the trains were on a regular war footing, and were liable to capture exactly as during hostilities. Their movements were wholly dependent upon those of the force to which they belonged, and a commanding general was obliged to give as much thought to this question as he would in actual operations. It is true there were certain restrictions in regard to camps, but not such as to seriously affect the reality of the problem. Since each side had some 17 camping places from which to choose for the four nights, it can be seen that neither commander could know that his opponent was tied down to a certain line of movement by the necessity of making camp in a certain place. * * *

COMPOSITION OF FORCES.

The red or home army was composed of the troops in permanent garrison at the great camp of Aldershot. About a year ago, upon the reorganization of the British army, these troops were constituted into the First Army Corps, with Lieut. Gen. Sir John French in command.

It will be noted what a sensible arrangement it was whereby this corps, which is held together all the year round in one great camp, ready to be used in part or whole for any service, home or foreign, was sent as a unit, under its commanding general, to practice in the field against an enemy, what it had learned during the preceding twelve months on the drill grounds and in the lecture rooms of Aldershot.

The scattered units of the Second Army Corps had been assembled under canvas on Salisbury plain, whence it had marched to Corsham to be in place when war was officially declared.

The following tables give the composition in detail of the two forces. The two corps d'armée were of equal strength, but the home detached force (red) gave the defenders the advantage by a brigade of infantry, 3 batteries, and a battalion of mounted infantry.

BLUE ARMY.

[Second Army Corps.]

Field-marshal commanding, Field Marshal Sir H. E. Wood.

Second Cavalry Brigade.—Cavalry—First Royal Dragoons, Fifth Royal Irish Lancers, composite cavalry regiment. Artillery—"V" Battery, R. H. A. Engineers—Third Field Troop, R. E. Mounted Infantry—Salisbury Battalion, A. S. C. No. 68 Company, A. S. C.

Fifth Infantry Division.—Ninth (Guards) Brigade—Grenadier Guards, Second Battalion; Scots Guards, Second Battalion; Irish Guards, First Battalion; East Kent Regiment, Second Battalion; No. 46 Company, A. S. C. Tenth Infantry Brigade—Royal West Kent Regiment, First Battalion; Royal Sussex Regiment, Second Battalion; South Lancashire Regiment, Second Battalion; York and Lancaster Regiment, Second Battalion; No. 56 Company, A. S. C. Divisional troops—Cavalry: One squadron, Dorset Imperial Yeomanry. Artillery: Twenty-third Brigade, R. F. A.; Twenty-fifth Brigade, R. F. A. Engineers: Eleventh (Field) Company, R. E. R. A. M. C.—Section, bearer company; half field hospital. A. S. C.—No. 32 Company, A. S. C.

Sixth Infantry Division.—Eleventh Infantry Brigade—Yorkshire Regiment, First Battalion; Dorsetshire Regiment, Second Battalion; Nottinghamshire and Derbyshire Regiment, Second Battalion; Rifle Brigade, First Battalion; Fifty-fourth Company, A. S. C. Twelfth Infantry Brigade—Duke of Cornwall's Light Infantry, Second Battalion; Border Regiment, First Battalion; Loyal North Lancashire Regiment, First Battalion; Shropshire Light Infantry, First Battalion; Fifty-third Company, A. S. C. Divisional troops—Cavalry: Squadron, Hampshire Imperial Yeomanry. Artillery: Twenty-fourth Brigade, R. F. A.; Twenty-sixth Brigade, R. F. A. Engineers: Fifty-seventh (Field) Company, R. E. R. A. M. C.—Section, bearer company; half field hospital. A. S. C.—No. 34 Company, A. S. C.

Corps troops.—Corps artillery—Composite regiment, Imperial Yeomanry; Fifth Brigade, R. H. A.; Forty-ninth Brigade, R. F. A.; Thirty-first Company, R. G. A. Corps engineers—"B" Troop, Bridging Battalion, R. E.; Second Division, Telegraph Battalion, R. E.; Fifty eighth (Field) Company, R. E. A. S. C.—No. 75 Company, A. S. C. R. A. M. C.—Section, bearer company; half field hospital.

RED ARMY.

[First Army Corps.]

Lieutenant-general commanding, Lieut. Gen. Sir J. D. P. French.

First Cavalry Brigade.—Cavalry—Thirteenth Hussars, Fourteenth Hussars, Eighteenth Hussars. Artillery—"C" Battery, R. H. A. Royal Engineers—First Field Troop. A. S. C.—No. 20 Company. R. A. M. C.—Detachment.

First Division.—First (Foot Guards) Brigade—Grenadier Guards, First Battalion; Coldstream Guards, First Battalion;

Coldstream Guards, Third Battalion; Scots Guards, Third Battalion; A. S. C., No. 48 Company, R. A. M. C., Detachment. Second (Infantry) Brigade—Royal Scots, First Battalion; Royal Lancaster Regiment, Second Battalion; East Yorkshire Regiment, Second Battalion; Royal Berkshire Regiment, First Battalion; A. S. C., No. 51 Company, R. A. M. C., Detachment. Divisional Troops—Artillery: Eighteenth Field Artillery Brigade, Twentieth Field Artillery Brigade. Royal Engineers: Seventh (Field) Company, R. E. A. S. C.: No. 52 Company, A. S. C. R. A. M. C.: Medical officer in charge.

Second Division.—Third (Infantry) Brigade—Royal Fusiliers, Second Battalion; Cheshire Regiment, Second Battalion; Yorkshire Light Infantry, First Battalion; Durham Light Infantry, Second Battalion; A. S. C., No. 55 Company; R. A. M. C., Detachment. Fourth (Infantry) Brigade—Lancashire Fusiliers, Second Battalion; Royal Scots Fusiliers, Second Battalion; East Surrey Regiment, First Battalion; Manchester Regiment, Second Battalion; A. S. C., No. 58 Company; R. A. M. C., Detachment. Divisional Troops—Artillery: Sixteenth Field Artillery Brigade, Twenty-first Field Artillery Brigade. Royal Engineers: Seventeenth (Field) Company, R. E. A. S. C.: No. 4 Company, A. S. C. R. A. M. C.: Medical officer in charge.

Corps troops.—Corps Artillery—First Horse Artillery Brigade, Thirtieth Field Artillery Brigade, two companies Heavy Artillery Brigade. Corps Engineers—"A" Pontoon Troop, R. E.; First Division Telegraph Battalion, R. E.; Searchlight Detachment, R. E.; Section Field Company, R. E. A. S. C.: No. 36 Company, A. S. C.

Detached force.—Fifth (Infantry) Brigade—Devonshire Regiment, Second Battalion; Somersetshire Light Infantry, Second Battalion; Wiltshire Regiment, Second Battalion; Argyll and Sutherland Highlanders, First Battalion. Artillery: Nineteenth Field Artillery Brigade. Royal Engineers: Half Twenty-third (Field) Company R. E. Mounted Infantry: No. 2 Battalion, Mounted Infantry. A. S. C.: No. 59 Company, A. S. C. R. A. M. C.: Detachment.

MANEUVER SCHEME.

The following is the general scheme of the operations:

"The hostile fleet (blue) has gained temporary command of the sea in home waters.

"The invasion of England has been decided on.

"With a view to misleading the defenders as to the actual landing place of the main army, two raiding forces have been despatched from the invader's ports to create diversions.

"One of these raids has succeeded in effecting a landing in the Bristol channel, and has captured the port of Bristol."

The task of the red army was to meet this invasion.

OBSERVATIONS.

The first thing to strike an observer moving about among the troops was the thorough-going interest which everybody took in his work. I saw nothing done in a perfunctory way, even late in the afternoon when all hands had reason to be tired. The officers gave no signs of that insidious disease of "being bored" from which they are popularly supposed to suffer; the noncommissioned officers—those incomparable servants in which no army can approach the British—were like keen sportsmen out with gun and dog, and they worked their privates along the covers and up the slopes with a skill that showed how often they had been under fire and with an eagerness that proved how thoroughly they took to the game.

I never remember seeing a man shoot without taking careful aim. This was so little in accord with my previous experience at maneuvers that I watched for the usual perfunctory loading and firing when I knew that my presence on the line had not been noticed. It was always the same; each man seemed to pick a target, carefully aim and pull. If he saw nothing to shoot at (and the enemy kept as well concealed as he did) he waited and watched. These are certainly good maneuver habits and speak well for the troops and the company officers and noncommissioned officers.

The men took cover in a skillful way and without being told. Hardly a shot was fired except lying, and never in any other position at the mid and long ranges. This had the advantage of also delaying the development of the action, as would happen in reality.

EQUIPMENT.

The men's equipment, and especially the light pack worn in the small of the back, facilitated all their movements, and noticeably the firing prone.

As the result of several years of hard campaigning in a desolate country the British soldier's pack, by a process of evolution, represents a compromise between the desire of the officials, who prescribe things for the knapsack in time of peace, and the soldiers, who throw them all away in time of war. The general truth has begun to be understood, that human nature will stand only so much nagging, and after that grows desperate and balks completely. As applied to knapsacks, this means that if you give a man too much to carry he will often and most inopportunely drop it all; therefore the British have reduced theirs to just enough to keep body and soul alive for a few days when separated from the wagons. The articles are carefully selected and are of the lightest and most serviceable material and form. (See photograph.)

THE INFANTRY.

The infantryman carries his rifle and ammunition, a very small haversack, a canteen, an overcoat, and a mess tin with his meat ration inside. The arrangement of this pack is admirable. The heavy ammunition belt balances the overcoat, which is tightly rolled and worn behind, just above the waist belt, being held by straps which pass over the shoulders like suspenders. The mess tin is shaped about like the half of a circular cheese, the flat side being boxed against the man's back. The tin is strapped on top of the overcoat; this, however, does not bring its top more than about to the lower point of the shoulder blade. I noticed that on the march most regiments slung the little haversack up over the shoulder, so that it rested on top of the mess tin. Thus the man had absolutely nothing flapping at his side as he walked, his bayonet and canteen alone being loosely slung. * * *

The campaign hat (see photograph) has evidently come to stay in the British service. Although not regularly issued, commanding officers are permitted to supply them to their men, and this they do out of their clothing allowance or pay. All the enlisted men and nearly all the officers at the

1903 maneuvers wore khaki-colored hats, with brims stiffer and broader than ours and with almost no curl. The material was firmer and heavier. The right-hand side of the brim was generally worn turned up and caught to the side of the crown with a glove fastener; in heavy rains or very hot sun the side is let down. A leather chin strap over one-quarter of an inch wide was always worn. * * *

As in France, the infantry shoe is hobnailed. The shoe is good in shape and quality.

No mounted officers wore boots at the maneuvers, all having the strap puttee. The mounted men wore the cloth puttee, the foot soldiers the short leather ankle legging, which they have worn for many years with complete satisfaction. (The Seventh Regiment, New York, some years ago adopted this gear, and it has given satisfaction to them.)

As in France, very many sergeants of all arms carried field glasses and apparently good ones.

THE CAVALRY.

The cavalry was well mounted and the horses and equipments were at all times in beautiful condition. The men rode with that easy harmony between rider and horse so noticeable everywhere in England. The mounted men carried their rifles with the butt resting in a "bucket" of oval shape hung from the rear part of the left side bar, while a thong passing from the upper band over the bridle arm kept the rifle vertical. The arrangement is not good, but it will in all likelihood soon be replaced by Colonel Patterson's system.

The cavalryman carries little more stuff on his horse than does the foot soldier on his back—overcoat, rations, canteen, and forage. The grain sack is slung in rear to the right side bar (balancing the rifle on the left), where it bobs uncomfortably against the horse's flank and the rider's thigh. The French system of carrying the grain is far better.

The saddle is pretty generally known in our service. The great length to the rear of the side bars would seem to compare favorably with ours, as the bearing surface is larger. The newer models have no padding, the simple leather-covered tree resting on the blanket as with us. Leather skirts, however, are retained and the seat is covered and not open. This model would appear to have been adopted during or since the South African war in imitation of the American and Canadian saddles used in those campaigns.

The horses are well bitted and the men seemed to have good hands as well as good seats. The bit and bridoon and double reins were of course used.

The bodies of cavalry and mounted infantry were used entirely in what we consider a rational way. They did reconnaissance and scouting work to get information, rarely leaving the roads except to dismount and go on foot for better observation of the terrain. There was a charge on the last day and Lord Roberts's criticism of it is instructive. In general, however, the cavalry was used, following those principles which American officers believe in; but, as pointed out by the director, there was a lack of enterprise and dash, certainly on the part of the invaders, and the hard riding, when such there was, was not always to the best purpose.

ARTILLERY.

The artillery was armed partly with Erhart guns and partly with the old type of field gun. * * * Only direct fire was used; no cover was thrown up and natural cover not much sought, as far as I could observe. The batteries were therefore usually conspicuous marks for each other.

The teams were always unhitched from the gun limbers and moved off to cover with the caissons. As they do not have our singletree arrangement hooking up on the cantle, this operation was not a quick one, and the objections against the whole system are evident. The gun, once in battery, has only one limber full of ammunition near at hand; to bring up more means that six horses are exposed on the line, and then they deliver normally only one more limber full. Coming into action and moving off are slow from the system of unhitching used, and no compensating advantages are assured.

Three batteries of 5-inch field howitzers took part in the maneuvers. They had 4 guns per battery, but the organization has lately been changed from 4 to 6 guns per battery. The pieces were drawn by 6 horses.

There were two heavy gun batteries 4.7-inch caliber (see photograph), 4 guns to a battery, 8 horses per gun. These pieces have the hydraulic recoil cylinders usual in such ordnance, and when fired recoil and return without much jerk. A few minutes only suffice for preparing the ground for coming into action, a small trench being generally dug for the trail, though this is not necessary. It was done at the time I saw these guns firing because the elevation was great, the range being 10,500 yards, and the guns were on the reverse slope of a hill, using indirect fire. The indirect pointing was done by the familiar method of ranging pickets planted in front of the battery. The sight had no goniometer attachment for use with an auxiliary aiming point. The pieces looked handy and light for this caliber, and the officers with them told me they gave very little trouble and were as mobile as could be expected. All these pieces, I was told, had seen service in South Africa, and new and improved models were being constructed.

One suggestion from the captain of the 4.7-inch gun battery struck me as most practical, though it may not be new. He said the desiderata in the matter of wheels were a medium width of tire for the road and a very broad tire for the fields. He thought this could be effected, as is done on some agricultural machines, by having two tires to each wheel, one about 1½ inches smaller in diameter than the other. On a fairly good road only the larger wheel would bear; when on soft ground this wheel would sink to 1½ inches, and then the second would bear, thus doubling or even trebling, if preferred, the available tire width.

All artillery was ordered to use a system of signals, screen and disks to indicate by color the kind of troops fired at (cavalry, artillery, or infantry) and, by relative location of the screen and disk, the direction of the fire.

This arrangement made umpiring more accurate, but it also lessened the chances of concealment for the artillery. However, estimating the effect of artillery fire at maneuvers is next to impossible.

NONCOMMISSIONED OFFICERS.

The British noncommissioned officer, as seen at work in the field, impressed one as fully deserving his reputation of being the best man of his class in the world. It is not conceded that the British sergeant of fifteen years' service is any better man than the American sergeant of the same experience; but these men in England exist as a class, and the service regularly produces them in sufficient number. With us, unfortunately, the type of rugged old sergeant is so scarce that few regiments can now boast of more than one or two.

He is generally between 30 and 45 years old, has served from 7 to 25 years, and has generally, even before 1899, seen hard service and some fighting in Asia or Africa. He is as attentive and smart when addressed by an officer as is the West Point cadet; he is short, sharp, and authoritative when speaking to his men. I have never heard that he is brutal with them, but he apparently is not worried about pleasing them. Those who fix his standard of conduct, the public whose approval he desires, is made up of the general body of sergeants in the battalion and garrison, strongly reenforced by the officers. Since the sergeants of a battalion (or small garrison) sleep apart from the men and have their own mess and amusement rooms, this esprit among themselves is easily accounted for, and their popularity or unpopularity with the privates is of small importance, provided they are well thought of in their own circle.

A British sergeant or corporal who was seen in uniform taking a drink, playing cards, or out for a walk with a private would be incontinently tried and broken.

These men, during the maneuvers, directed the privates and corporals with the most watchful care and skill. They were noticeable for their seriousness over the game. They spoke quietly, seeming rarely to scold, and were obeyed immediately.

The following remarks of Lord Roberts on the difficulties of obtaining information and the importance of mobility on the field of battle are considered especially interesting and important:

"In South Africa we were wont to attribute most of our failures in gaining information to the intimate knowledge of ground on the part of the Boers and to their natural power of concealment. These maneuvers have, however, clearly brought out the fact that the increased range of rifles, smokeless powder, and the greater dispersion of troops will probably always cause extraordinary difficulty in obtaining information. We have had instances where a very small body of troops has been able, by concealment and by rapid fire, to induce the opposing force to multiply the estimate of their strength into battalions, or even to report a squadron as being a brigade. This is a point to which we must pay particular attention in future, and officers employed in reconnaissance work must henceforth be prepared to undertake even greater risks than they have hitherto done if they hope to supply their commanders with reliable information.

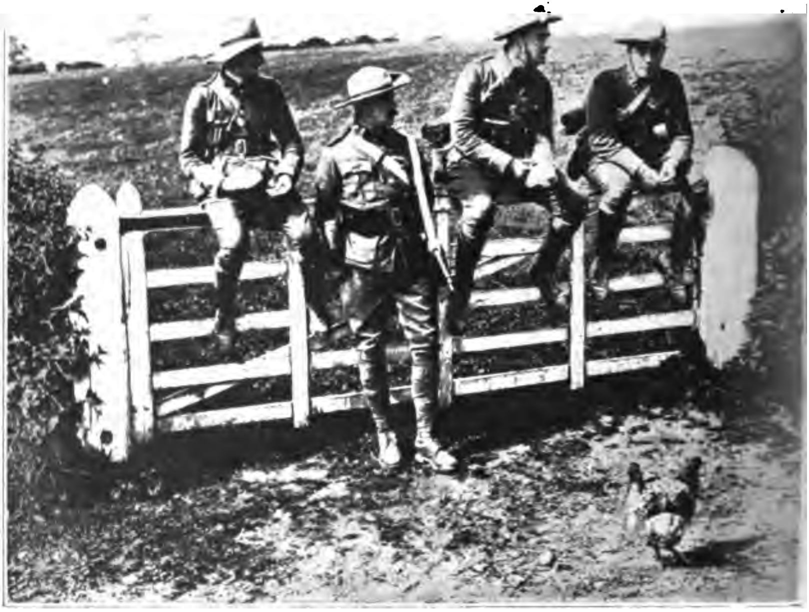
"A greater dispersion of troops under fire will still further accentuate the importance which mobility gives to cavalry of reinforcing a weak spot in their own line, or of attacking a weak spot in that of the enemy. By an intelligent use of this power of mobility, coupled with a thoroughly expert use of modern firearms, either in delaying an infantry advance or in attacking it in flank, the cavalry of the future should accomplish great things. I am not satisfied that in these maneuvers the cavalry have displayed quite as much independence or initiative as I had expected would have been the case after our experiences in South Africa, and I think if cavalry commanders will carefully consider what they might have done, and weigh against it what they actually did do, they will agree with me.

"The condition of the artillery horses excited my admiration. I was disappointed to find the guns were so much exposed. There were exceptions, but on the whole there was practically very little attempt at concealment, and in several cases batteries neglected infantry fire in a manner which would have caused them unnecessarily heavy loss.

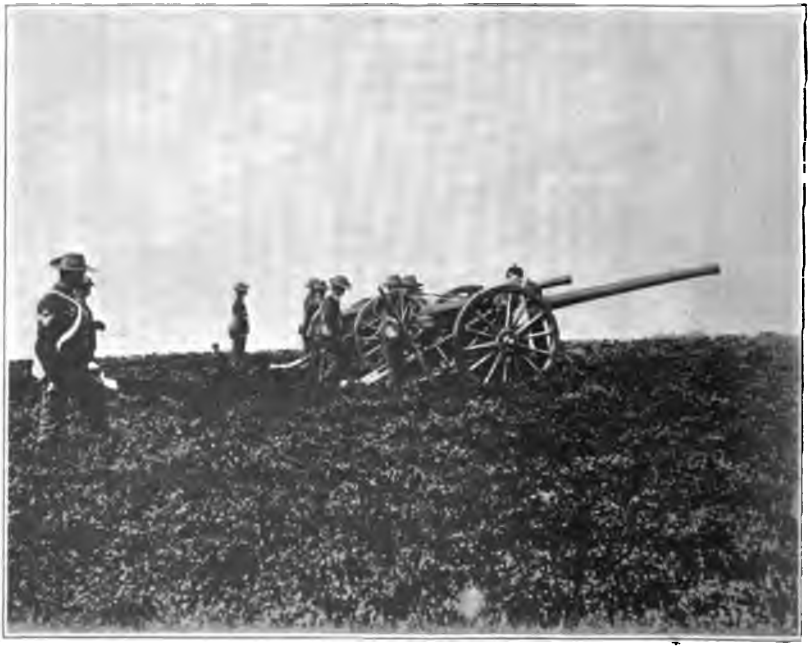
"The infantry marching was admirable, they took cover well, and both in attack and defense showed the great improvement in the training of that arm as a result of our experiences in South Africa."

[Extracts from report of Capt. Lawrence Timpson, First New York Regiment.]

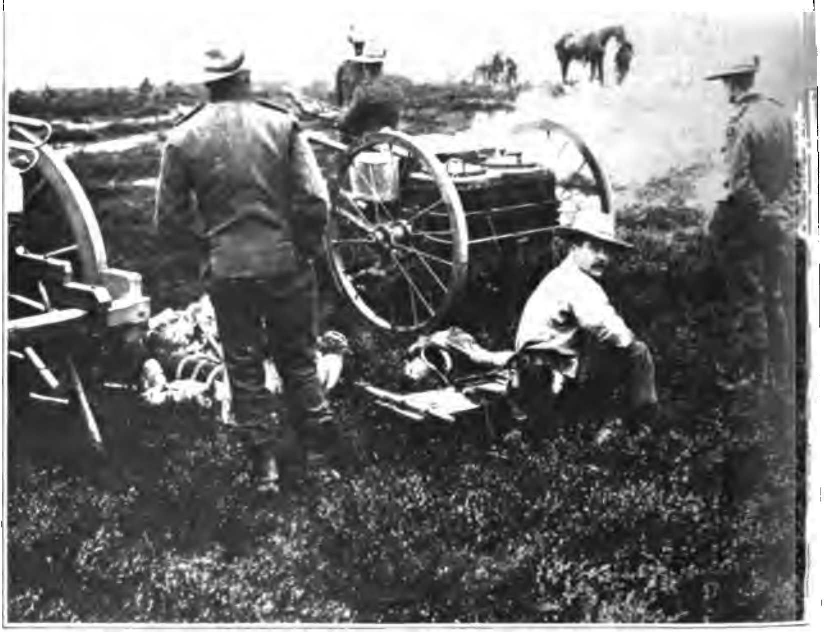
In regard to the difficulties of obtaining information, upon which the commander in chief touches, I wish to add that I gave particular attention to this subject, spending considerable time with the scouts of both armies, and passing from one side to the other to verify their information. I almost invariably found them well posted and well concealed, the officers all having good glasses. They were surprisingly well



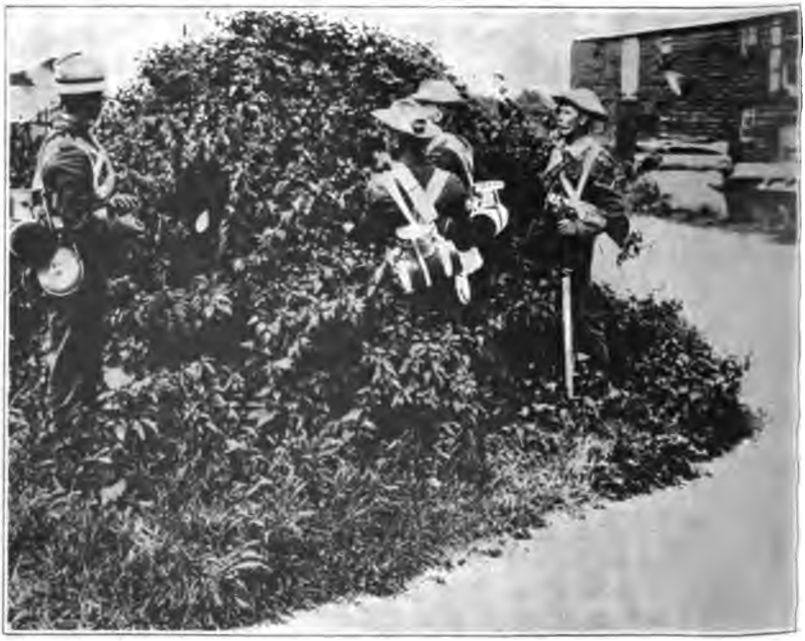
CAMPAIGN HAT.



THE 4.7-INCH GUN.



PORTABLE SOUP KITCHEN.



METHOD OF CARRYING PACK.

informed as to the position of the enemy's scouts, their exact strength, arm, and usually as to their corps, but they seemed to have very little accurate information as to the whereabouts of the enemy's main force, or to be able to break through the enemy's chain of scouts. In regard to the exposure of the guns, this was in some instances owing to the fact that the officers in command of batteries had no means of knowing from which direction the fire was supposed to be coming, or that their batteries were under fire at all. Under service conditions this would not occur.

The marching powers of the troops were above criticism, and were a valuable lesson to the foreign officers present. At midnight of Sunday, the 13th, General Scobell's cavalry brigade (red army), consisting of the Thirteenth, Fourteenth, and Eighteenth Hussars, left Petersfield, marched through Winchester, and making a half hour's halt at Whitchurch, 30 miles distant, for food and water, reached Newbury at 10 in the morning, a distance of 42 miles. Some of his scouts were pushed on to the neighborhood of Hungerford, 8 miles farther. All this without a single foundered or overtired horse. At the same hour General Bruce Hamilton's infantry brigade (red detached force), consisting of the Second Devonshires, Second Somersets, Second Wiltshires, and the First Argyle and Southern Highlanders, left Burford and marched to Wantage, a distance of 22 miles, reaching there at 7 in the morning, doing better than 3 miles an hour for 7 hours, without the loss of a man. This must not be considered in the light of a day's work. It was merely a night march preliminary to the day's work.

The Volunteer Motor Corps played a most useful part in the maneuvers. Without it the work the umpires accomplished would have been impossible. * * *

What impressed me most forcibly during the maneuvers, both singly and collectively, was the British private soldier, and he was in no way a novelty to me, for I had known him all my life. At the end of the week's work, coming as it did after the preliminary maneuvers, and weeks in camp under the most trying weather, he was as cheery and smart as though he had just come out of barrack yard. He took a most intelligent interest in the maneuvers, carrying out his part of them, the uninteresting detail, faithfully to the end.

He is physically fit, and joins the service for the love of it. His ability to think for himself and take the initiative under modern conditions in extended formation, possessed in common with him only by American troops, places him farther above the conscripts of European armies than were his forbears of Marlborough's and Wellington's days. He is proud of his regiment, his officers, and of himself, and he well may be.

(The accompanying photographs are by Captain Timpson.)

COST OF BATTLE SHIP IN COMMISSION.

In answer to a question in the House of Commons on Friday last, Mr. Pretyman stated that the average annual cost of maintaining in commission a first-class battle ship of, say, 13,000 tons, is approximately as follows: Full pay, wages, etc., of officers and crew, £40,369; victualling, £14,604; coal, £23,600; stores and repairs, £9,548; naval ordnance stores, £5,500; or, in round figures, a total cost of £94,000.

ARMAMENT OF NEW SHIPS.

The following is a list corrected to date of the armament of the new war ships to be laid down during the present financial year, and of those completing for sea: Two battle ships, *Lord Nelson* class, 15,000 tons odd; four 12-inch, eight 9.2-inch, twenty 12-pounders; four cruisers, *Warrior* class, 13,500 tons odd; six 9.2-inch, four 7.5-inch; two *Duke of Edinburgh* class, 13,500 tons odd; six 9.2-inch; ten 6-inch; six *Devonshire* class; four 7.5-inch, six 6-inch. The 18,000 ton battle ships are definitely abandoned—docks for them would have to be built.—*Engineer, May 13, 1904.*

NEW VESSELS.

Extract from Report of the First Lord of the Admiralty, 1904-5.

Between 1st April, 1903, and 31st March, 1904, inclusive, the following ships will have been completed and passed into the fleet reserve: Six battle ships, *Prince of Wales*, *Queen*, *Albemarle*, *Cornwallis*, *Duncan*, *Exmouth;* 9 armored cruisers, *Euryalus*, *Bedford*, *Berwick*, *Cumberland*, *Donegal*, *Essex*, *Lancaster*, *Monmouth*, *Suffolk;* 1 second-class cruiser, *Challenger;* 2 sloops, *Cadmus*, *Clio;* 3 submarines, 11 destroyers, 8 torpedo boats, 1 repairing ship, and 1 surveying vessel (purchased).

On 1st April, 1904, there will be under construction 8 battle ships, 13 armored cruisers, 1 second-class cruiser, 4 third-class cruisers, 8 scouts, 23 destroyers, 11 submarines, 1 river gunboat, and a new admiralty yacht.

And it is expected that between the 1st April, 1904, and the 31st March, 1905, inclusive, the following ships will have been completed and passed into the fleet reserve: Three battle ships, 5 armored cruisers, 1 second-class cruiser, 4 third-class cruisers, 8 destroyers, 10 submarines, 1 river gunboat, and the new yacht.

It is proposed to commence during the financial year 1904–5: Two battle ships, 4 armored cruisers, 14 destroyers, 10 submarines.

The purchase of the two battle ships being built for Chile has necessarily modified the situation, and accordingly Parliament is asked to approve of the commencement of two new battle ships instead of three, and of their commencement in the autumn instead of in April, as proposed last year.

NAVAL NOTES.

According to the Naval and Military Record, the new 4 inch quick-firing gun which is to replace the present one of the same caliber is a decided improvement over the latter. With a charge of about 10 pounds of cordite, a velocity is obtained that is 530 feet per second greater than that of the present gun.

The weight of the projectile is 31 pounds, while the weight of that of the present gun is only 25 pounds, with a charge of 3 pounds 9 ounces of cordite. In the new gun the charge will not be inserted in the brass case, but will be made up in silk-cloth bags only.

According to the same authority, by far the most important of the new ordnance which is being introduced into the navy is the 7.5-inch 45 caliber fighting gun. With a charge of

77¾ pounds of cordite and a 200-pound projectile, a muzzle velocity of 2,860 feet per second is obtained. The gun is 45 calibers in length.

This is perhaps relatively the most powerful gun in existence and it is claimed that it can not be matched for range, penetrating power, speed of working, facility of loading, and general all-around usefulness by the ordnance of any other nation.

ITALY.

ITALIAN GRAND MANEUVERS.

The theater of operations for the grand maneuvers of 1903 onsisted of an irregular quadrilateral of about 4,000 square meters, known as the Veneto, of which the city of Treviso is he center. This theater of operations is of great historic nterest from the number of campaigns that have been conducted there in the past. From the very beginning of the maneuvers an interesting military situation presented itself, on account of its resemblance to the situation presented in the campaign of 1848, the events of which campaign are described in the historical monograph "The Piave and German Roads," copies of which monograph were distributed by the direction of maneuvers to the officers of the two forces, so that they might familiarize themselves with the important events which took place in the past in this same territory. Maps of the maneuvers territory were prepared by the Military Geographic Institute, and liberally distributed to all commands, each company even being provided with copies.

COMPOSITION OF THE FORCES.

The "blue" force, which consisted of the Third Army Corps, with the cavalry division and the Alpine troops, was formed in the vicinity of Padua on August 26. The total strength of the "blue" force consisted of 29 battalions of infantry, 17,500 rifles; 30 squadrons of cavalry, 3,750 lancers; 16 field batteries, 2 horse batteries, and 2 mountain batteries—total of 80 guns.

The "red" force, which consisted of the Fifth Army Corps, with a division of mobilized militia and a cavalry brigade, was concentrated in the vicinity of Belluno on August 27. The total strength of the "red" force was 39 battalions of infantry, 23,500 rifles; 18 squadrons of cavalry, 2,250 lancers; 21 field batteries and 1 horse battery—total, 88 guns.

The composition of the two forces is shown in detail in the accompanying plates.

The direction of maneuvers assembled at Treviso on August 26.

RATIONS.

The rations issued to the troops during the maneuvers were as follows: Beef, 250 grams; macaroni or rice, 180 grams; lard, 15 grams; salt, 20 grams. Two rations of coffee were distributed each day (10 grams of roasted coffee and 15 grams of sugar) or one ration of coffee and one of wine (25 centiliters).

COMMUNICATIONS.

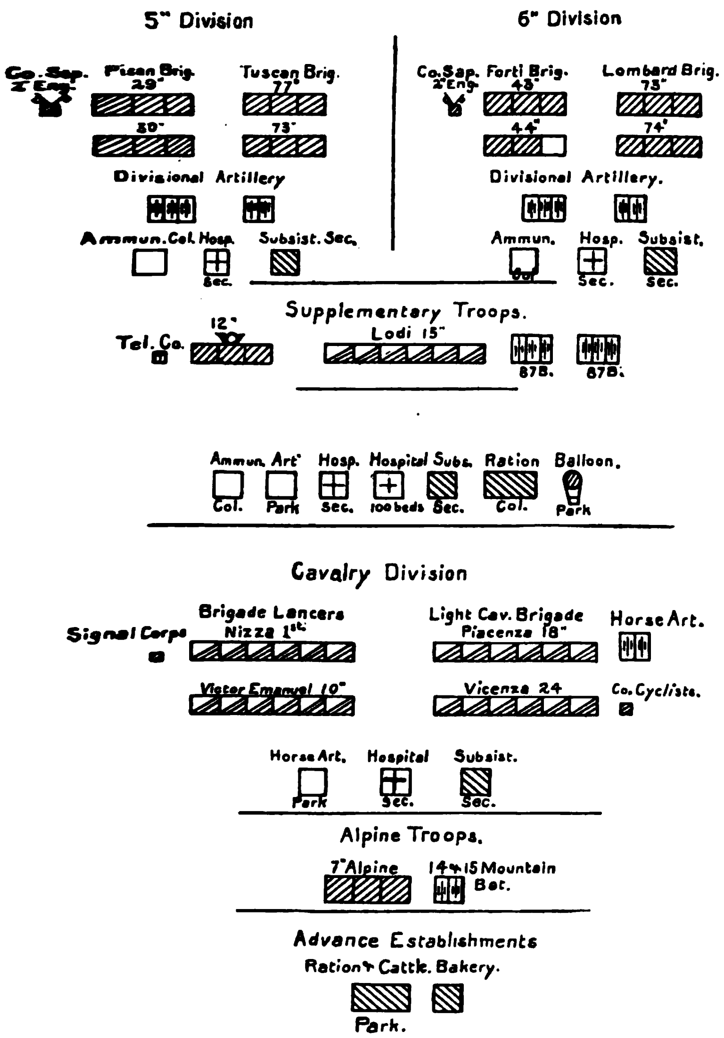
In war the greatest difficulty is not in gathering news of the enemy, but rather in having the commands receive it in time to make use of it. The old-fashioned method of sending cavalry ahead and using the telegraph to transmit the news gathered is not always possible; therefore, subsidiary technical means are necessary, and great use was made of these this year in spite of the fact that the Padua and Belluno telegraph lines are quite extensive. To facilitate reconnoitering, aerostatic parks for reconnoitering service were used, one for each side; indirectly, cyclists' sections were used. To facilitate the transmission of news, optical telegraphs and carrier pigeons were utilized. During the maneuvers, and particularly during the scouting period, each regiment of the cavalry division was provided with a heliograph section and 24 carrier pigeons from the military pigeon establishment of Bologna, from which point news received by carrier pigeons was telegraphed to the commands concerned. Each regiment of the cavalry brigade was provided with a heliograph section only. Correspondence between the advance patrols and the command of the corps was carried on by heliograph. The heliograph used was arranged for either sunlight or artificial light, using acetylene gas.

"Draghi" balloons were used by the direction of the maneuvers for giving signals.

One of the principal features of the grand maneuvers this year was that, contrary to what has been done in the past, not only was greater freedom left the commanders of the two opposing forces, reducing as much as possible predisposed

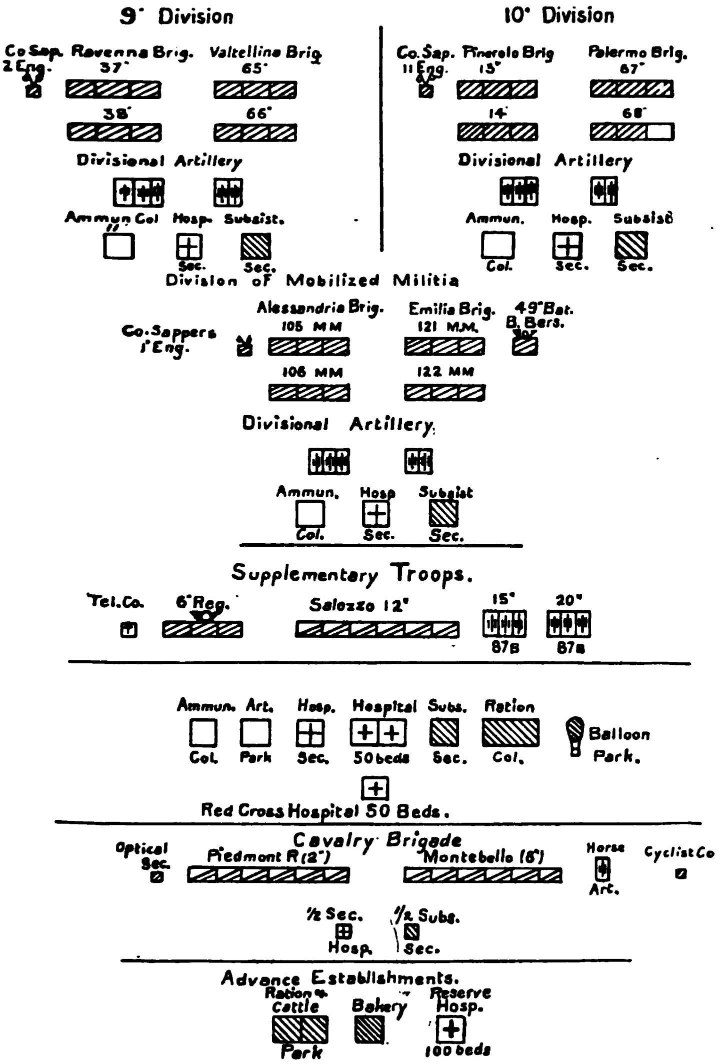
BLUE ARMY

III ARMY CORPS



RED ARMY

V ARMY CORPS



conventionalisms, but the maneuvers resembled real war also in what concerns logistic services, carried out on the same lines and by the same means as in time of war, as far as possible. In war time, the rationing service from the center to the front is carried out in this manner. From the central depots, which are placed on railway lines in the centers of the country, the rations are sent by rail to head stations on the line as near to the troops as possible. From these stations to the troops transportation is continued by the ordinary means of wagons, and for this service every army corps is provided with a "ration column;" but when the distance between the troops and the head station on the line is such as to render the means of the "ration column" insufficient, the addition of an "advance depot of ordinary rations" is made. With this advanced depot is also an advance bread-making plant. The ration columns and the cattle parks provide rations and live cattle to the ration sections with which every division is provided, and these ration sections after having butchered the cattle distribute the meat to the troops, together with the other food from the advance depot of ordinary rations or from the advance bread-making plant. From this it can be seen that if rationing during the grand maneuvers is carried out by the ordinary methods of peace time—that is by distribution made directly to the troops by the contractors—all the functions above described are done away with, with the consequence that a lot of indispensable training is neglected. It was attempted to correct this defect this year by a system which closely resembled that followed in time of war. The contractors did not furnish the troops directly, but supplied the advance depots. These advance depots, by means of ration columns, distributed the rations to the troops.

The organization of the sanitary service, like that of the other services, was carried out so as to resemble real war as much as possible. The infantry and cavalry divisions and the supplementary troops had their respective sanitary sections. The cavalry brigade had a half sanitary section.

For the temporary care of the sick the army corps were followed by camp hospitals. To the "blue" force was assigned a camp hospital of 100 beds; to the "red" force two small camp hospitals of 50 beds each, and the pack hospital of the Red Cross. The field hospital of the Red Cross merited especial attention. It was composed of 13 tents, covering an area of 3,600 square meters; a tent for surgical operations, 1 for receiving the sick, 4 with beds, 1 with 2 beds for officers, 1 with 2 beds for contagious diseases, and the remainder for attendants. A movable kitchen completed the establishment. The tents were of double canvass, which contained a moderate temperature inside. The entire hospital is carried on mules, and was able to follow the Alpine troops anywhere.

The hospital contained, among other things, a highly prized bicycle litter, used in Germany and Austria.

For instruction and experiment a detachment of war dogs, trained to search for the wounded, was attached to the Fifth Corps.

Wireless field telegraph, after the Marconi system, was used practically for the first time. It gave good results, although fault was found with it on account of the length of time necessary to set up the station.

After a state of war was declared by the direction of maneuvers to exist, the commanders of the two forces had complete liberty of action in choice of the means to accomplish the object intrusted to them.

The service of security was carried on without interruption.

All communication between the two parties was prohibited, and the necessary intercourse with an adversary was had by means of flags of truce, and in order not to take away from the maneuvers the character of uncertainty as to the adversary's intentions, the superior direction ordered that no exact news be communicated to the papers as to the movements of the two parties until the contact had become so close as to render irrevocable the orders already given.

NOTES ON THE GRAND MANEUVERS.

In this country there is a general and justified conviction that the grand maneuvers of the past year have marked the beginning of a new and more rational and practical method, rendered more efficacious by the elimination of as many conventionalities as possible in this instruction of the army.

This method is based on the instructions given to the head of the general staff and director in chief of the maneuvers that they should resemble actual warfare as closely as possible from strategic, tactical, and logistic points of view. The movements were to be unpremeditated and for each side dependent on the moves of the adversary, and only to be judged and foreseen by an accurate and active service of scouts instead of being, as used to be the case, established before hand by the directors, and carried out so as to reach an already established result. Rations were to be distributed so as to present more or less the difficulties which are often encountered in real warfare, without allowing—as has happened in the past—the commissariat of one side to calmly cross the enemy's lines, in order to reach (the maneuvers over for the day) a point established as a halting place for the troops of the opposite party for which the rations were intended.

It is only in this way that the commanders of the great tactical units can carry out their own ideas, and it is thus easy to study the defects and disadvantages of the various services, and to find remedies for them.

It must not be thought, however, that the resemblance between grand maneuvers and real war is such as to exclude all conventionalism. In times of peace liberty of action is necessarily hampered in various ways, either by financial considerations or those due to the habits and occupations of the inhabitants, considerations which can only be waived in the case of the supreme necessity of the country's defense.

This statement is indispensable in speaking of the maneuvers, as the public from its own point of view has not yet given up the old conventional way of judging of their result from the appearance of the operations. The public wants a winner and a loser, and in judging to whose lot fell the supposed victory can not take into consideration the extraneous reasons which have favored the advance of one side and compelled the retreat of the other, as it also ignores the fact that the advisability of ending a maneuver in the first half of a day sometimes prevents clearly defining the situation of the two sides.

The grand maneuvers assumed this year special importance. It was the first time in Italy that the preparation and direction of the grand maneuvers had been given to the head of the general staff, and the importance of this fact is such as to need no comment. The new "general rules for the tactical use of the great war units" recently published by the general staff were used in place of the "general rules for the employment of the three fighting arms," which had been for so many years, but which it was now necessary to modify in keeping with the altered and perfected firearms.

Till now the technician only worked, and with good results: the tacticians, on the other hand, held off until a few years ago, as if the introduction of smokeless powders, the adoption of rifles of small caliber and quick-firing guns did not concern them and did not require any modification of the tactical principles in use. And it is not one of the least important lessons that the late wars have taught—that of having called attention to such an important point, and shown how erroneous was the belief of European armies that arms so perfect and powerful could be used under the tactical rules of 30 years ago. It is only natural, therefore, that the grand maneuvers should have been carried out as carefully as possible so as to attract all the attention to these rules and the modifications which will be considered necessary.

In Italy the grand maneuvers represent the indispensable completion of the annual instruction of the troops and the officers, and the best possible preparation for war of the general staffs and of the generals; above all because it gives them experience in the handling of troops and the inevitable difficulties that arise therefrom, either during operations or in actual battle. But these high aims will never be reached until the leaders of the parties are conceded complete freedom of action and some way is found to show the losses of the troops during an engagement.

With regard to the freedom of action it would appear that everything had been provided for. Regarding losses during engagements, the old regulations remained in force. These regulations consider the case of a whole detachment being put "hors de combat" by an umpire, but take no account of the ordinary losses that officers and men would suffer under fire.

It is clearly absurd, for example, that a division should carry out an attack, and at the end of it, after having been under a death-dealing fire for hours, should find itself in line with all its men. Of course we know that maneuvers, in the details of an engagement, can not accurately resemble real war, but we are too far from realty as it is, and an engagement is completely robbed of any resemblance at all to truth under the present system.

We are all aware of the objections which are made to a suggestion of keeping track of the losses in the maneuvers; these are principally: The danger of exercising a demoralizing influence on the troops, and the material difficulty of counting the losses. To the first objection it can be answered that nothing is to be more feared for the soldier than novelty. When he already knows and is firmly convinced that his company is exposed to losing in a few seconds not a few soldiers, if he actually should see them falling around him dead or wounded he would certainly not receive that strong and painful impression that he would if he were not prepared in heart and mind.

With regard to the difficulties of determining the losses it can not be denied that they are considerable, though not insurmountable, with a little good will.

These losses could be determined by the umpires. This system would, however, require a large body of umpires permanently attached to each corps. In any case their duties would certainly not be easy, owing to the long battle lines and the prevailing extended order. A means of avoiding all difficulties would be for the officers of each detachment to establish the losses themselves, which system would also present the great advantage that the officers, always watching the enemy's fire, would form an accurate idea of its modern value, as well as the necessity of taking advantage of all cover; in a word, to prepare them in the best possible way for war.

Naturally, the elimination of officers, noncommissioned officers and privates, owing to the losses caused by the enemy's fire, ought to be temporary, as happens now for the detachments put "hors de combat." All these groups could be held in one place designated beforehand by the authorities, and after being regimentally reorganized, they would be at the disposal of the director of the maneuvers, who could employ them to reinforce their respective sides.

The soldiers who go to the hospital also diminish the usefulness of the corps; it is therefore only logical that the same should happen in the case of supposed losses suffered under fire. Of course the umpires should always have the right to verify the losses suffered, as well as that the eliminated men are sent to the destined locality, and also to establish themselves the losses of the troops with which they personally are.

For future maneuvers to attain as great a perfection as possible, the most one can desire is a greater watchfulness of the enemy's movements after their whereabouts are once established, a scrupulous observance of the conditions imposed, reasonableness and possibility of all movements; things which would appear easy of attainment, but do not always result in practice.

For the maneuvers to resemble still more actual warfare. keeping in mind the experience taught by the last, it would be advisable on another occasion to establish along the rear lines of communication small detachments to guard them, so that it may not afterwards be said that certain cavalry operations succeeded owing to the unprotected condition of the roads—a thing which would certainly not happen in times of war.

But these are little defects which become noticeable in the absence of greater ones, and it is only just to state that General Saletta, head of the general staff of the army, who is specially charged with the instruction of those who occupy important positions in the army and with the surveillance of the various services, can well be satisfied with the results obtained in these maneuvers, carried out for the first time under his own rules.

The director of the maneuvers had published "general orders" which said that the conduct of all the troops was to conform itself to the spirit of the "general rules for the tactical employment of the great units."

"Temporary practical instructions" had been distributed to the mounted and field artillery and "Conduct under fire" for batteries 75–A and 87–B, under experiment.

For the other corps the same directors advised that the above-mentioned rules were hampered by the fact that the tactical regulations had not yet been agreed with the "general rules" mentioned. But the circular of the direction added that "the broadness of the ideas on which the regulations are based make the rules themselves practically applicable under ordinary conditions." The same circular advised the officers not to hurry or precipitate operations, keeping in mind the time actually necessary to the development of successive phases of an encounter, to say nothing of the preparations to face the fire which must precede certain movements. It also advised the observance of all precautions calculated to diminish the effect of the enemy's fire, and with that object to take all possible advantage of the conformation of the ground, calling attention to the fact that it is sometimes advisable to retard or momentarily change the direction of a march if by so doing losses can be diminished and the possibility of an advance assured.

It also called attention to the fact that an infantry advance is now impossible on open ground, except where an action presenting a stronger fire than the enemy's can be evolved.

The leaders of the two armies had besides added to the "general rules" other rules for the tactical employment of small detachments, advising their leaders to always strive to have a stronger fire than the enemy, so as to inflict the heaviest possible losses and saving their own side from them, and entering into other details which it would be idle to go into fully here. Fire at will was advised in preference to volleys, accurate aim being necessary to insure the best effects, with the advice of adding to its intensity as the distance diminished.

All these recommendations were, on the whole, followed fairly accurately, but one not rarely saw detachments exposing themselves more than was necessary while firing, even when by a slight movement they could have taken almost complete cover.

Attention must be called to the fact that the Valtellina brigade marched across the Fener bridge in full view of the enemy and under the fire of 16 batteries at 2,500 meters and of two brigades of infantry at a range varying between 800 and 1,100 meters.

Regarding discipline under fire, it must be admitted that much must still be exacted and obtained. The Italian soldier, easily excited as he is—not from fear but enthusiasm—finding himself in possession of a weapon which allows him to fire several shots a minute, can not control himself when the enemy is in sight, even though he be at a great distance, and does not reserve himself until the enemy is closer and he can put a quicker fire into the advancing masses, but often fires not only without aiming but even without pointing his weapon toward the enemy.

This essentially necessary fire discipline is not to be developed from one day to another during the maneuvers; it must be inculcated into the soldier from the moment he is given his rifle and particularly during the instruction in battle exercises that the regiments go through every year and which generally precede the maneuvers. It must be the result of continuous and insistent teaching, as is shown in the very noticeable difference between one regiment and another in this particular respect.

As an example of marching power, the Lombardy brigade has been mentioned as having covered 12 kilometers *in* 2 hours, after having already marched a long distance. It must be added that during the 2 hours no one, or hardly any one, dropped out, though the sun was already high and hot, and in spite of the heavy knapsacks and the fact that 50 per cent of the men in the brigade were recalled men and had been but a few days under arms. When one considers that there was nothing to prevent similarly composed brigades from doing as much (the whole sixth division from dawn on the 30th to 9 o'clock of the 31st September had covered 57 kilometers, leaving behind not more than 30 or 35 men out of 6,000, and most of these merely from slightly sore feet), it is clear that our infantry, if given time to train all its men equally, could march with the greatest speed and endurance, even while keeping to the instructions given by the commander in chief to spare the troops needless wear and tear, unnecessarily quick assemblying, and unjustified movements.

The cavalry's marked improvement has already been mentioned. It must be said that, from all points of view, the action of the small detachments was always preferable to that of the great masses; and this proves increase of knowledge among the officers in these last 2 years. Certainly the use of great masses was not an easy matter when the nature of the ground is considered; nor is it the duty of great tactical cavalry units, acting independently of the divisional commands, to look for the adversary's cavalry with the object of engaging it, but rather to obtain information regarding the strength and movements of the enemy, leaving to the divisional cavalry to watch over the safety of the other troops, and threaten continually the adversary's flank. With the intensity of fire which has been reached, massed movements are difficult for cavalry, and this should lead the commanders of the great tactical units to leave as much freedom of initiative as possible to their subordinates.

Without discussing the new piece, 75-A, which is considered to need some modifications of the carriage, it is superfluous to state that the field, mounted, and mountain artillery proved themselves to be most efficient, for the good will and knowledge of both officers and men, and for the praiseworthy way in which it was used by the commanders of individual detachments; for the skillful choice of positions and for its bearing in action under the new regulations which prescribe that one or more batteries should no longer mathematically direct their shots at a target presented at a certain distance and in a given position, but should instead cover with their shots an entire zone.

The commissariat service has been abused right and left. Certainly it has caused some trouble but not enough to justify the cry which has been raised. If maneuvers are to resemble real war, drawbacks and difficulties must also be in keeping. Large detachments, and even sometimes whole regiments, flanking the main column of the "red" army, were obliged to march and camp among the hills, where their wagon trains reached them with difficulty, and mess had to be partaken of late at night, which, of course, is a thing to be avoided, but for which no one is to blame. Some cavalry detachments, moving by quick marches from one place to another, and modifying or changing their itinerary, were obliged to shift for themselves for food and forage wherever they happened to be; and they were duly authorized to do so. But it is not always easy to obtain food and forage of the necessary quality and in the necessary quantity, and even these detachments have been obliged to eat their meal and feed their horses at unaccustomed hours. All this does not prove that on the whole the commissariat service was badly carried out. Some delay in the distribution of rations and forage to distant detachments is bound to occur unless the movements of the troops are to be subordinate to the regularity of their meals.

In 1903, as in 1899, a division of "mobilized militia" was formed, and in both cases placed under the orders of the second in command of the general staff of the army as if to prove the importance of such an experiment of mobilization. In the division formed for the maneuvers, as in those which would be formed in the case of a general mobilization of the army, the command of brigades and regiments was given to officers in active service and auxiliary positions. Company commanders, adjutants, and some subalterns were also taken from the active army. The other subalterns were chosen from among the officers on leave. Some of the recalled officers profited by exemptions too freely granted by ministerial decrees in time of peace; others, on the other hand, showed good will by promptly joining their corps, some of them even showing a fair amount of knowledge. Some lacked training and military spirit, two things which can not be acquired by mere strength of will. Their work was not bad, and it would have greatly improved had they been kept under arms a month longer or had the maneuvers been real war.

The same lack of training and military spirit was noticeable among the recalled men, especially among those coming from large cities, where physical education is generally neglected and where many are engaged in business or trades which keep them at a desk or in a factory 8 or 9 hours a day. For these in particular, unused for some years to military life, ten days of preparation are not enough to enable them to bear with equanimity the work of a soldier in the field.

It is generally thought that arrangements should be made for these maneuvers to take place every year, possibly engaging in them even more than one army corps on each side, because the grand maneuvers are not only useful but indispensable to the proper schooling of the higher officers, to the instruction and unity of action of the general staffs, to the knowledge of the country in which in time of war the fighting will take place, and to the instruction of the individual soldier as well as the troops in general.

The schooling of companies and battalions once completed, knowledge of country acquired by means of district tactical maneuvers (the usefulness of which could be further increased by making, whenever possible, the troops of one district maneuver against those of another) the instruction of the troops should be completed at the grand maneuvers.

And to develop these as much as possible without increasing expenses, the so-called field maneuvers might be, except in special cases, suspended as they are only carried out between divisions of the same army corps—sometimes even between brigades—in a country always very well known to the directors of them, and consequently can never reach that resemblance to real war without which this sort of schooling becomes useless.—*M. I. D. no. 2120—c, 1904.*

JAPAN.

SMALL ARMS.

The following is a description of the Japanese "thirtieth year" rifle, model 1900, at present in use by the Japanese troops:

Caliber, 0.256 inches; muzzle velocity, 2,300 foot-seconds; weight of bullet, 163 grains; weight with bayonet, 9 pounds 8½ ounces; weight without bayonet, 8 pounds 9½ ounces: rounds in magazine, 5; loading system clip.—*From Proceedings of the Royal Artillery Institution, April, 1904.*

JAPANESE FIELD GUNS.

Up to 1901 Japan had a bronze 9-pounder Krupp field gun, but in that year a new-pattern steel gun was issued, and rearmament is now complete. The new gun is known as the Arisaka gun, but not many details have yet been published about it. It has screw-breech mechanism, and recoil is checked by drag shoes with spikes or spades underneath. "Separate" ammunition is used. The Japanese mountain gun is similar to their field gun, but has a muzzle velocity of 850 foot-seconds, and a range of 3,000 yards. The field artillery ammunition columns are formed of 2-wheeled 1-horse carts and of pack animals.

The following table gives a description of the present Japanese gun:

Caliber ... inches..	2.95
Weight of shell ... pounds..	11
Muzzle velocity ... foot-seconds..	1,660
Estimated rounds a minute ...	6 to 7
Range with time fuse ... yards..	5,000
Number of rounds in limber ...	40
Diameter of wheel ... inches..	55

—*From Proceedings of the Royal Artillery Institution, April. 1904.*

ORGANIZATION OF DIVISION.

The Japanese regular army is not organized in army corps, but in 13 divisions. A division includes 2 infantry brigades (each of 2 regiments of 3 battalions), 1 cavalry regiment (about 400 sabers), and 1 artillery regiment (field or mountain) consisting of six 6-gun batteries.—*From Proceedings of the Royal Artillery Institution, April, 1904.*

THE BUDGET FOR 1903.

The Rouskii Invalid gives the following details of the Japanese budget for 1903:

The government receipts are reckoned at 273,630,876 yen (a yen is about 2 shillings), and the credits allotted to the various departments are as follows:

ORDINARY EXPENDITURE.

	Yen.
Civil list	3,000,000
Foreign affairs	2,282,785
Interior	10,583,416
Finance	61,763,678
War and admiralty	59,781,374
Justice	10,837,708
Public instruction	4,845,645
Agriculture and commerce	2,948,912
Lines of communication	21,172,976
Total	177,216,494

EXTRAORDINARY EXPENDITURE.

Foreign affairs	52,724
Interior	9,846,373
Finance	39,482,696
War and admiralty	15,044,752
Justice	565,640
Public instruction	2,045,156
Agriculture and commerce	3,824,513
Lines of communication	22,346,142
Total	93,207,996

The grand total of the ordinary and extraordinary expenditure thus amounts to 270,424,490 yen. The total of the credits devoted to the war department and the admiralty (ordinary and extraordinary) being 74,826,126 yen, it results that Japan devotes 28 per cent of her total credits to her military and naval matters. This is a relatively high percentage; it is 21 per cent in Germany and 25 per cent in Russia. It may not be uninteresting to show the items of the ordinary and extraordinary credits devoted to the army:

ORDINARY EXPENDITURE.

	Yen.
Central administration	238, 272
Maintenance of troops	36, 968, 180
Gendarmerie	1, 054, 794
Colonial troops	153, 520
War funds	7, 550
Total	38, 432, 186

EXTRAORDINARY EXPENDITURE.

	Yen.
Construction of fortified works	2, 931, 772
Equipment of troops	2, 471, 688
Armament	1, 644, 538
Engineers	269, 852
Provisional army corps in Korea	246, 503
Pacification of Formosa	50, 000
Military legislation, archives, etc	310, 123
Special credit	73, 687
Total	7, 998, 163

The credits for the land forces alone thus amount to 46,430,349 yen.—*From Journal of Royal United Service Institution, December, 1903.*

THE SUPPLEMENTARY BUDGET FOR 1904.

Following is the supplementary war budget, as passed by the Diet of the Japanese Government, and published in the Official Gazette:

	Yen.
Income raised for war expenditures	380, 000, 000
Outcome to be expended	380, 000, 000

SUPPLEMENTARY BUDGET OF 1904.

Revenue	62, 201, 879
Expenditure	110, 000, 000

ORDINARY REVENUE.

		Yen.
Article I. Taxes		50,114,797
1. Land tax	23,936,213	
2. Income tax	5,287,315	
3. License tax	5,036,199	
4. Tax on "sake"	178,484	
5. Tax on Japanese sauce	1,138,952	
6. Tax on sugar	8,212,382	
7. Tax on mining	79,115	
8. Tax on mercantile exchange	532,846	
9. Export tax on "sake"	5,398	
10. Customs duties	2,300,633	
11. Tax on wool cloth	2,138,661	
12. Tax on oil	1,238,599	
Article II. Stamp revenue		3,620,797
Article III. Government properties		8,466,285
		62,201,879

EXTRAORDINARY EXPENDITURES.

1. Extraordinary war expenditure	70,000,000
2. Reserves	40,000,000
	110,000,000

Special Budget.

Article 1. Revenue of monopoly bureau	15,759,872

EXPENDITURE OF MONOPOLY BUREAU.

1. Salaries and wages	41,564
2. Repairs	4,500
3. Funeral expenses	458
4. Miscellaneous	354
5. Undertakings	3,435,119
6. Purchase of leaf tobacco	987,900
7. Purchase manufactured tobacco	70,041
Article 2. Reserves	100,000
Total	4,639,936

TRANSPORTATION.

As showing the amount of transportation by sea necessary for a division, it is stated that the transportation of the Twelfth Japanese Division, which landed at Chemuplo between February 8 and March 3, required 74 transports with an aggregate tonnage of 128,300; total force amounted to about

22,000 men, of whom about 16,000 were effectives. The Twelfth Division proper consisted of about 14,700 men, as follows:

Infantry	10,800
Pioneers	700
Train	600
Artillery	900
Cavalry	500
Hospital corps	700
Ammunition column	500

And in addition two battalions of about 1,800 men of the Fourth Division. The other 5,500 men transported consisted of clerks, skilled laborers, coolies, and other noncombatants.

AGE LIMIT OF OFFICERS.

According to an article of December 1, of the present year in Kampo, new regulations have been made concerning the age limit for officers. The highest admissible ages for the various ranks are as follows:

	Present age limit.	Former age limit.
	Years.	*Years.*
General	65	65
Lieutenant-general	62	65
Major-general	58	60
Colonel	55	58
Lieutenant-colonel	53	55
Major	50	51
Captain	48	48
First and second lieutenants	45	45

For field-marshal-general no age limit has been fixed.—*Armeeblatt, April 13, 1904.*

JAPANESE COMMERCE IN MANCHURIA AND NORTHERN CHINA.

A Japanese newspaper, Osaka Mainichi, edited in one of the most industrial districts of Japan, publishes the following statistical information on the commerce of Japan in Manchuria and northern China:

The imports and exports of the Japanese in the ports of Niuchwang, Tientsin, and Chefoo, not including Port Arthur, Dalny, and Tsiaodshow, amount to $15,000,000. Including the latter three places the Japanese commerce exceeds that of any other country. The following figures of imports and exports into Tientsin and Chefoo in 1901 indicate the predominance of the Japanese: Japan, $4,600,392; Hongkong, $3,446,252; all other countries, $1,635,738.

The same may be said of Japanese imports into Niuchwang, with the exception of the imports of cotton goods, in which business the Americans are at the head. Imports from the United States, $2,946,500; from East Indies, $2,357,200; from Japan, $942,880.

On the other hand, Japan is leading in the business of exporting beans and bean cakes from Niuchwang, which average from $3,535,800 to $4,714,400 per annum.

Upon the whole, the commerce of Japan in Niuchwang is more than $11,786,000 per annum.

The shipping business is also in full swing with the commercial activity and the enterprise of the Japanese. In 1901 Niuchwang was visited by 261 Japanese steamers, with cargoes of 202,230 tons; 192 English steamers, with cargoes of 196,282 tons; and steamers of other nationalities, with cargoes of 71,741 tons.

The foregoing shows how great are the interests of Japan in Manchuria. The latter country is of more consequence to Japan than Korea, and in the future Manchuria, with her large natural wealth and with the larger productiveness of her population in comparison to Korea, will become an active purveyor of agricultural and mineral products for Japan and will supply many of the raw materials for her manufacturing establishments.

Even now Japan has very large sums invested in improvements in the port of Tsin-van-dao, with the intention of making this port the basis of her commercial dealings with northern China and Manchuria.—*From Journal of American Asiatic Association, January, 1904.*

A NEW JAPANESE BATTLE SHIP.

Through the courtesy of Sir W. G. Armstrong, Whitworth & Co. (Limited) and the Japanese naval authorities, we are enabled to give our readers the following particulars of the vessel now building at the Elswick Shipyard for the Imperial Japanese navy: Her length on the water line is 455 feet; her breadth, 78 feet 2 inches; her draft, 26 feet 7½ inches, and her displacement, in tons, 16,400; and she will carry for her armament four 12-inch guns, twin mounted in barbettes; four 10-inch guns, mounted singly in barbettes; twelve 6-inch guns in the citadel; twelve 12-pounder guns; six Maxim guns; three 3-pounder guns, and five torpedo tubes. The disposition of the above-named armaments has been most carefully considered so that there is no interference with one another in the firing of the different guns, which, however, are all capable of being trained through large arcs. The 12-inch guns are 26 feet, and the 10-inch 22 feet above the water line. The 6-inch guns in the battery are from 13 to 14 feet above the water line.

The general disposition of the armor protection is that adopted in the latest and most powerful battle ships, the armor amidships being carried from below the water line right up to the upper deck. Above the level of the upper deck additional protection has been adopted, a 4-inch screen being worked to a height of 7 feet 6 inches above the upper deck and extending between the 10-inch gun positions. The main armor belt, which extends the whole length of the vessel, has a thickness of 9 inches for more than half its length, tapering to rather less at the extremities. The depth of this belt is from 5 feet below water to 2 feet 6 inches above water. Immediately above this is a belt of 6-inch armor, extending in length from the after 12-inch barbette right forward to the stem. Above this again is the 6-inch citadel armor carried to the height of the upper deck and inclosing the two 12-inch barbettes. In this citadel are placed 10 of the 6-inch guns, divided from one another by screens of 80-pound armor plating and firing through ports similar to those adopted in casemates. This citadel arrangement, which is one of the most important features of this and other recent battle ships, is really a revival or development of the old box battery arrangement adopted in some of the British battle ships, built in the seventies, such as the *Shannon* and *Alexandra*.

The remaining two 6-inch guns fire through similar ports in the 4-inch screen armor on the upper deck amidships. The barbette armor of the 12-inch guns is 9 inches thick on the upper portions where exposed, and 5 inches thick where protection is afforded by the citadel armor. The barbette armor of the 10-inch guns has a thickness of 6 inches, the conning-tower armor is 9 inches thick, and the observer tower 5 inches thick. In addition to these two armored positions for commanding officers, three officers' shelters are to be built of 3-inch armor, one above the conning tower and one on each side. Besides the armor described above, a steel protective deck runs throughout the entire length of the vessel, the whole of the machinery, magazines, etc., being kept below. This protective deck has a thickness of 2 inches on the flat portions amidships, and 3 inches on the sloping sides, which are carried down to meet the bottom of the main armor belt. At the ends, where the armor protection is reduced, this deck has a thickness of 2½ inches all over. Thick protective plating is also worked on the top of the screen armor at the boat deck level.

Special attention has been paid to the arrangement and disposition of the magazines, so that the ammunition can be got to all the guns with the greatest speed and minimum of trouble. There are independent magazines for each pair of 12-inch guns and for each 10-inch gun, and an ammunition passage is provided running right around the machinery spaces below the protective deck for the supply of ammunition to the various 6-inch and smaller quick-firing guns. The torpedo tubes are situated in water-tight chambers, 2 tubes forward and 2 aft firing on the broadsides, and 1 tube firing right astern, also under water.

The twin engines will have 4 cylinders each, of 36, 56, 63, and 63 inches, with a stroke of 48 inches, and the horsepower will be sufficient to give a speed of at least 18½ knots. The coal bunkers are so arranged as to reenforce the protection given by the armor and protective deck to the engines and boilers, while their disposition is such as to require very little trimming to get the coal to the furnaces. The bulk of the coal can also be got to the stokeholds without opening any of the doors in the main water-tight bulkheads—a point of very great importance when the vessel is in action. In addition to the coal bunkers below the protective deck, reserve bunkers are arranged on the slopes of the protective deck up to the height of the main deck over the length of the machinery spaces amidships, the total capacity being approximately 2,000 tons, which is sufficient to give the vessel a very large radius of action.

A very complete outfit is being provided for the vessel, including the following boats: Two 56-foot vedette torpedo boats of high speed, one 36-foot steam pinnace, one 40-foot launch, one 32-foot pinnace, three 30-foot cutters, and two 30-foot gigs. For lifting these boats two powerful electrically worked derricks are provided, one on each side of the vessel.

There is also a powerful electrical equipment, both for providing energy for the numerous machines on board and also for lighting. The latter will include provision for 6 searchlights and some 1,250 incandescent lamps.

The vessel being of such an immense weight—over 17,000 tons with her full equipment of coal, stores, etc.—special arrangements have been provided for docking her with safety, and, in addition to shoring rib-bands for giving special support to the armor in dock, two docking keels are provided on the flat portions of the bottom under the bilges amidships. These keels will rest on separate lines of blocks in the dock, as well as the usual blocks along the middle line of the vessel. Bilge keels are also provided to reduce rolling in a seaway.

The water-tight subdivision of the vessel is of a most thorough description; the inner bottom extends over the whole length of the vessel, and is minutely subdivided, and above this the number of transverse and longitudinal water-tight bulkheads is too numerous to mention.

Two complete sets of steering engines, independent of one another and in separate water-tight compartments, are fitted with steering positions both forward and aft. Hand gear is also provided, and appliances for changing as quickly as possible from hand to steam gear, and vice versa. Tiller indicators are fitted in all the steering and conning-tower positions. Helm signals are provided for the purpose of communicating the position of the helm to other vessels in the neighborhood. Voice pipes, telegraphs, and telephones are fitted throughout the vessel to communicate between all the important positions. The vessel is also to be supplied with a wireless telegraphy installation. Torpedo net defense is to be fitted around the greater part of the vessel, which, in view of recent experience, appears to be not an unnecessary precaution.

The 12-inch guns will weigh, approximately, 59 tons each. The length is 46 feet 9½ inches (46.7 calibers). The weight of the projectile is 850 pounds. The charge will be cordite, probably of the modified type. The exact weight of the charge is not yet fixed, and neither can the velocity be given, but these guns will be the most powerful 12-inch guns which have yet been constructed. No armor which any ship can carry can hope to cope with their penetrating powers at 3,000 yards. The breech screw is arranged for a parallel motion, which obviates the necessity of having a steep cone at the seating of the obturating pad. It is yet early to speak of the rapidity of fire to be obtained with these guns, but it is anticipated that, in conjunction with the mounting described, the hitherto obtained rate of approximately two rounds per minute from each gun will be exceeded.

The 10-inch guns will weighs, approximately, 34 tons each. The length is 39 feet (46.76 calibers). The weight of the projectile is 500 pounds. The charge will be cordite, probably of the modified type. As in the 12-inch guns the exact weight of the charge has yet to be fixed, but here again this will be the most powerful gun of its caliber in existence. As a gauge of the power of these guns it may be noticed that their penetrating power is equal to the penetrating power at 3,000 yards of any of the 12-inch guns at present afloat in any navy.

The breech mechanism will be somewhat similar in design to that of the 12-inch, and will embody all the essential advantages of that design. The rapidity of fire of these guns on the Elswick mounting it is anticipated will at least be at the rate of three rounds per minute with a well-drilled gun's crew.

The 6-inch guns will weigh approximately 8½ tons. The length is 23 feet 6 inches, approximately (47 calibers). The weight of the projectile is 100 pounds. The charge will be probably M. D. cordite; but here again this is not definitely fixed, but these guns will be the most powerful guns of their description made, having a penetrating power at 3,000 yards equal to, if not exceeding, any 6-inch guns hitherto built. The breech mechanism will be of the Elswick modified coned type, actuated by the single motion of the lever, and, as in the other gun, the necessity for the steep-coned obturator is obviated. The exact type of the smaller guns is not yet settled, but they will also follow the general advances in power and efficiency noted in the case of the heavier armaments.

12-inch gun mountings.—The 12-inch guns are mounted forward and aft on the midship line. Owing to the powerful nature of the guns these mountings are necessarily stronger than any hitherto manufactured in this or any other country. The design is arranged with a view to occupying the least possible space in the ship, and at the same time to give ample room for working the machinery. The general features of the design are the turntable proper containing the mountings for the gun, the working chamber underneath, into which the ammunition is received from the magazine and shell rooms in preparation for sending up into the secondary or loading hoist, the trunk connecting the working chamber with the magazines and shell rooms, and the hoist connecting the working chamber and the gun. This latter hoist is so arranged that a gun can be loaded at any angle of elevation or training. The charge for each gun, consisting of the projectile and the cordite charge, the latter in two halves, is brought up at one time in a loading cage, which is automatically stopped in its proper position in line with the breech opening of the gun.

It is then rammed home by means of a chain rammer actuated by a hydraulic motor. The breechblock of the gun is opened or closed by a hydraulic motor, thus enabling this operation to be performed with great rapidity. In the working chamber, by an ingenious arrangement, the projectile and the two halves of the cordite charge are simultaneously transferred from the cage which works in the trunk connecting the shell rooms and magazines with the working chamber to the cage working in the hoist, connecting the working chamber with the gun position. The ammunition trunk is of new design, which enables the ammunition cage always to come to the same position in the magazines and shell rooms; but when it is brought up to the top of the trunk the cage is in its proper position with respect to the ammunition-loading hoist, although the turret may be revolving at a quick rate, or, in other words, the ammunition trunk does not revolve at the bottom, but revolves with the turntable at the top. The guns are protected by 10-inch hard armor in the front and 8-inch at the sides and back. The feature of the turret is that it is quite balanced, thus enabling it to be readily trained by hand, although the ship may have a heel at the time.

There are three systems for performing the operation of training, primarily by hydraulic power, and should this fail through any of the piping being shot away electric training gear can be quickly put into operation, and, finally, should this be disabled the turret can be turned by hand. Similarly, the question of elevating and depressing the gun can be performed by working primarily by hydraulic power and then either by electric or hand. The operations of loading can also be performed by hand should the hydraulic system be disabled. To safeguard against accident by freezing in the intense cold which is found in the China seas during the winter months, heating apparatus is fitted throughout the turret installation. The gun mountings are so arranged as to give the gun 18 degrees elevation and 3 degrees depression, a greater range of elevation than has hitherto been provided for mountings of this description. The training angle is arranged for 270 degrees; that is to say, from right ahead or right astern to 45 degrees before or abaft the beam. The turret can be trained at the rate of one complete revolution (viz, 360 degrees) per minute. In the shell room suitable overhead hydraulic lifting and traversing arrangements are made for lifting the shell out of the bays and placing them in the cage, but this operation can also be done by hand should necessity require it.

The sighting of the guns is provided for by a central sighting station and two side-sighting stations, one on the left and the other on the right. By an ingenious arrangement the captain of the turret is enabled, by working one lever, to train or elevate the gun, or to perform both these motions at the same time. Voice pipes and other apparatus are fitted to enable the officer in charge of the turret to communicate his orders to the magazine and shell rooms. A complete system of electric circuits enables the guns to be fired from any one of the eight positions, either simultaneously or independently. Percussion firing arrangements are also provided.

10-inch gun mountings.—Each 10-inch gun is placed in an armored revolving gun house or turret. The ammunition is sent up in a lifting cage from the magazine and shell room direct to the gun platform, each cage containing a projectile and cordite charge in two parts. On reaching the gun platform the projectile is quickly transferred to a hinged loading tray, fixed on the gun cradle by means of an intermediate resting tray, the cordite being transferred by hand to the loading tray. By this arrangement three projectiles are always in waiting for loading, insuring rapidity of fire. The projectile and charges can then be rammed into the gun by a telescopic hydraulic rammer. This rammer is arranged to follow the gun in elevation or depression, so that it always remains in line with the gun axis, enabling the operation of loading to take place at any angle within the usual fighting limits. The training of the gun house is performed, as in the case of the 12-inch, primarily by hydraulic power; then by electric, and, finally, if necessity occasions it, by hand, and like the larger mounting, it is balanced so that the operation of training by hand can be readily performed, although the ship may have a heel. The breech block of the gun is arranged to be operated either by hydraulic power or by hand. The gun can be elevated by hydraulic power as in the 12-inch. The operations of training and elevating are performed by the single motion of a lever. These guns also have the large range in elevation of 18 degrees, with 3 degrees depression. The sighting of the gun is provided for by two positions, placed on the right and the left of the gun, respectively. A complete set of electric firing circuits is fitted to enable the gun to be fired from either of these positions. Percussion firing gear is also provided. The guns are protected in front by 9 inches of hard armor and on the sides and back 6 inches. The training angle is from right ahead to 30 degrees before or abaft the beam, or a total angle of 120 degrees.

6-inch gun mountings.—The 6-inch guns are mounted on the well-known central pivot principle. This principle was first introduced by Sir W. G. Armstrong, Whitworth & Co., and has since been adopted for mounting guns of medium caliber by all the governments and armament constructors in the world. Briefly to describe this system, it may be said that the gun is mounted in a cradle in which it recoils, the recoil being absorbed by an oil buffer attached to it forming a part of the cradle, the piston of which is attached to the gun. The cradle is mounted by means of trunnions on a Y piece which revolves on hard steel balls placed on a fixed pedestal. This pedestal is bolted to the ship's structure, the elevating arrangements are attached to the cradle, thus enabling the elevating gun number to work the gear even during the firing of the gun without injury to himself. Telescopic sights are fitted in a convenient position. Electric circuits are fitted to enable the guns to be fired by the simple operation of pressing the trigger of a pistol. Arrangements for percussion firing are also provided. A circular shield is attached to the revolving Y piece so as to keep the port opening in the ship's side blocked up at any angle of training. This port opening allows for the guns to be trained through a range of 120 degrees, viz, 60 degrees before the beam and 60 degrees abaft.

The ammunition supply for the 6-inch and 12-pounder guns is arranged for by supplying to each 6-inch gun an electrically-driven ammunition hoist of the improved Elswick design. These hoists will bring up the projectile and the cordite charge and maintain a continuous supply. The operation of the hoist is extremely simple and necessitates the minimum personal attendance. The seaman working the hoist has only to start it in motion and then keep it supplied with the necessary ammunition, which is automatically discharged in a position best situated for the working of the gun. The hoists for supplying the 12-pounder guns are of similar design; 8 of them will be placed in suitable positions for supplying the 12-pounder guns.—*From The Engineer, April 8, 1904.*

MANCHURIA.

THE CITY OF HARBIN.

One of the greatest achievements in city construction that the world has ever witnessed is now going on in the heart of Manchuria.

In the building of such cities as Vladivostok, Dalny, and Port Arthur, Russia has demonstrated her power and purpose on the Pacific in line with the world's conception of her character; but in the construction of this wonderful city of Harbin she is displaying an altogether different type of activity from what we are prone to attribute to her.

It is in this city more than in all the others combined that Russia is asserting her intentions of becoming an active industrial force in the affairs of the Orient, and her people are already giving the place the title of the Moscow of Asia.

The city is located on the Sungari River, at the point where the Manchurian branch of the Siberian Railway crosses the stream and where the Chinese eastern branch starts south to Dalny and Port Arthur. It is about 350 miles west of Vladivostok, and 600 miles north of Port Arthur. Its location is the geographical center of Manchuria, and from present prospects it is to become the commercial center as well. The city is surrounded on all sides for hundreds of miles with a rich and productive agricultural country, producing corn, wheat, oats, barley, beans, millet, hemp, tobacco, vegetables, and some fruits. Minerals and timber and great areas of grazing lands also surround it.

At present the place consists of the old town, 3 miles from the central depot; Prestin, or the river town, the present commercial center; and the administration town, in close proximity to the railway station. Before the railway engineers established this as their headquarters there was no native town in this vicinity, and the entire place is, therefore, a Russian product.

ADMINISTRATION.

It is as distinctly a Russian city as though it were located in the heart of Russia, and none but Russians and Chinese are permitted to own land, construct buildings, or engage in any permanent enterprise. The city has been created by the Russian Government under the management of the Manchurian Railway Company. The land for many miles in each direction has been secured so as make it impossible for any foreign influence to secure a profit or foothold close to the city, and foreigners are not recognized as having any rights whatever, but are permitted there by sufferance. The chief railway engineer is the administrator of the city, and up to the present time has had complete control of everything; but in the new scheme for the government of Manchuria some form of municipal organization will be permanently established.

POPULATION.

In 1900 the place began to assume importance as a center of railway management, and in 1901 the population had grown to 12,000 Russians; in 1902, to 20,000; by May, 1903, to 44,000; and in October, 1903, a census showed a population of 60,000, exclusive of soldiers. Of these, 400 are Japanese, and 300 of all other nationalities, including Germans, Austrians, Greeks, and Turks. All the rest are Russians. There are no Americans.

The railway and administration employees, including families, constitute 11,000 of the population. The Chinese population is about 40,000, located in a special settlement. The ratio of women to men is as follows: Japanese, 120 per cent; Russians, 44 per cent; Chinese, 1.8 per cent; average of women, 14.3 per cent.

ADMINISTRATION IMPROVEMENTS.

Harbin is the center of the entire railway administration of Manchuria, and, as the Russian commercial enterprises of the Far East are under the direction of the railway company, it will also be the center of Russian industrial and commercial development. It is the headquarters of the civil courts and the chief military post, and the main center of control of all the vast army of railway guards. The administration city, therefore, consists of all of the public and private buildings and shops necessary for these various departments. Residences for the employees cover the largest area of this division of this marvelous city.

The following are some of the principal buildings of the administration city:

Building.	Cost of buildings.	
	Rubles.	United States currency.
Administration buildings, 3 stories in height, having a total floor space of 3,600 square sagene (176,400 square feet), to cost when finished	1,200,000	$618,00
Railway shops	2,500,000	1,287,50
Hospitals	626,000	322,39
Commercial school and girls' school	500,000	257,50
Technical school	250,000	128,75
Eight schools for teaching Russians Chinese and for teaching Chinese Russian	96,000	49,44
Club and store for employees	370,000	190,55
Hotel	163,000	83,94
Russo-Chinese Bank	200,000	103,00

The total administration expenditure on the city has been 30,000,000 rubles ($15,450,000).

TRANSPORTATION.

Steamers.—The Sungari River is navigable with light-draft steamers and native craft for nearly 200 miles above the city, up both branches of the river, and much traffic has already developed on these streams, especially in wheat.

From Harbin to the Amur River, during the navigating season, which begins in April and ends November 1, good-sized river steamers run daily. These steamers are well fitted with good comfortable cabins for first, second, and third class passengers. They carry large cargoes of freight and usually tow barges loaded with freight. From Harbin to seagoing steamers at the mouth of the Amur cargo is carried now at 14 kopecks per pood, or about $4 gold per ton. The Chinese Eastern Railroad Company and the Amur Steamship Company run good steamers on this line, and there are also several private boats covering the same route. All are loaded continually to their full capacity.

The steamers are mostly of the stern-wheel type, burning wood, such as are in operation on the western rivers in the

United States, but as far as I could learn none are constructed of American-made machinery. The time usually required to go from Harbin to Harborofsk, at the mouth of the Ussuri River, on the Amur, is five days. At this place these steamers connect with trains for Vladivostok. * * *

INDUSTRIES AND IMPROVEMENTS.

Harbin was started primarily as a military center and an administration town for the government and direction of railway affairs. Its growth into a splendid commercial and manufacturing city was not originally provided for by the promoters, and it has been somewhat of a surprise to them; but the fever of making it a great Russian commercial and manufacturing city has now taken possession of the railway management, and every system of promotion and protection that can be devised to increase its growth along these lines is being energetically encouraged.

The capital for most of the private enterprises is furnished by Siberian Jews. Chinese are furnishing money for the construction of some of the finest private buildings, such as hotels, storerooms, etc. In the administration part of the city no private buildings of any kind are permitted. * * *

INDUSTRIES OF HARBIN.

Flour mills.—The leading industry of Harbin is the manufacture of flour. Eight mills are now in operation, all with modern European machinery with one exception, and that is a small one constructed with American machinery. Applications have been made and granted for the construction of two more large ones, and by the middle of 1904 ten mills will be in operation, producing 25,000 poods (902,800 pounds) of flour per day. They pay from 30 to 35 cents gold per bushel for their wheat delivered at the mills, and the wheat-producing area can be increased enormously. The present value of the flour mills in Harbin is 1,200,000 rubles ($618,000). * * *

Meat-packing establishments.—There are several companies engaged in this business, with plants costing altogether 250,000 rubles ($128,750). They cure hams, bacon, and all varieties of smoked meat, and produce excellent articles. The hogs and cattle in this part of the country are grain fed and make splendid meats, and the Russians are experts in preparing it for markets. So far these concerns have not been able to supply the Manchurian markets, but the cheap labor of the country, in combination with the cheap grain and the familiarity of the Chinese with hog raising, makes a good foundation for the growth of the industry, and I can see no reason why it should not continue to grow sufficiently to produce all that may be required for the oriental markets.—*From The Journal of the American Asiatic Association, March, 1904.*

MEXICO.

Comparison between current budget and the proposed budget for 1904–5.

Department.	Current budget.	Budget for 1904-5.	Difference (increase, +; decrease, −).
Legislature	$1,155,801.20	$1,155,801.20	
Executive	267,300.86	282,341.11	+ $15,040.25
Judiciary	449,803.40	450,423.90	+ 620.50
Ministry of foreign relations	783,489.25	773,034.14	− 10,455.11
Ministry of the interior	9,261,774.35	11,112,816.98	+1,851,042.63
Ministry of justice	968,969.70	1,183,595.35	+ 214,625.65
Public instruction	3,135,598.43	3,520,050.56	+ 384,452.13
Ministry of fomento	1,145,718.30	1,536,105.65	+ 390,387.35
Ministry of communications and public works	9,743,723.83	10,089,605.21	+ 345,881.38
Ministry of finance and public credit			
Administrative services	7,681,740.65	7,834,138.45	+ 152,397.80
Public debt	24,542,543.99	25,235,043.99	+ 692,500.00
Ministry of war and marine	15,713,596.31	16,389,200.85	+ 675,604.54
Total	74,850,060.27	79,562,157.39	+4,712,097.12

RÉSUMÉ.

Current budget	$74,850,060.27
Net addition	4,712,097.12
Contingent expenditure for Yucatan campaign	300,000.00
Budget authorizations for 1904–5	79,862,157.39
Total estimated revenue	79,965,000.00

—*From report of minister of finance.*

THE PUBLIC DEBT OF MEXICO.

The public debt of Mexico on June 30, 1903, amounted to $432,516,594.83 silver, reducing the gold debt to silver at the current rate of exchange. It is estimated that in round numbers $15,000,000 of this debt is held at home and $417,000,000 in foreign countries. As approximately $325,000,000 of the amount represents subsidies to railroads, harbor improvements, like those at Veracruz, Tampico, Coatzacoalcos, and Manzanillo, important public works, like the drainage of the valley of Mexico, sanitation works, public buildings, and the cost of construction of the Tehuantepec Railway, it may be said that approximately three-fourths of the Mexican national debt is represented by actual investments of public utility.

This is a remarkable showing as compared with the national debts of most other countries, which represent in their entirety the cost of war. In other words, the public debts of most nations represent capital actually destroyed, while three-fourths of that of Mexico represents capital invested in productive works.—*From Modern Mexico, January, 1904.*

RUSSIA.

THE RUSSIAN ARMY IN 1903.

On January 1 14 of each year the Russian Invalid publishes a leader on the modifications made in the army during the ending year. The following short summary will give an idea of the progress accomplished:

The measures taken for the betterment of the general conditions of officers and military functionaries were continued. Higher pay was given to the staffs in the military circonscriptions, as well as to officers, functionaries, and employees of the military establishments, and to those of the staffs under the general staff. The pay of the chaplains in the army and navy was also increased.

Dispositions were taken to build military clubs and quarters for officers, and many of an altogether new and very comfortable type have been erected in several garrison towns. The allowance of officers' quarters outside the barracks was increased and a new rate of commutation of quarters put into effect.

As a result of experience since 1898, the Emperor has approved new regulations for the officers' military clubs.

A change in the pension regulations enables beneficiaries to receive pensions on entering the service, provided they receive no other pay from the treasury department. Changes in the marriage regulations for officers have been made less strict, and facilitate the marriage between officers and the daughters of officers.

Rules governing promotion in the subaltern grades (after four years' service in each grade) have been extended to Cossack officers. The medical men of these troops have also had their pay bettered. All military doctors can now receive the "Order of St. Vladimir, fourth class," with ribbon and the inscription "for 25 years," under the same conditions as officers and chaplains of the army.

The civil functionaries of the war department, when they are pensioned with the right to uniform, are now allowed to wear shoulder knots, the same as retired officers. This measure is retroactive.

With the desire to raise the religious tone of the men, construction of chapels in the barracks was continued; military chapels were finished in 29 garrison towns.

New barracks were built at 15 different places, not counting the important works undertaken to house the Kvantoon and Amoor troops.

Regarding military instruction, proposals have been drawn up for the instruction of infantry in field fortification and shelter, for gymnasium instruction, for the reward of sharpshooters. Apparatus for electric field signaling has been tried, and new types of trenches for the new 75 mm. batteries have been studied. The electrotechnical military school has made exhaustive trials with wireless telegraphy and succeeded in communicating in this way between St. Petersburg and Marva.

First-year students of the military medical academy were sent for service with troops, to thoroughly acquaint themselves with the work they were being trained for, thus suggesting the changes useful to make in the medical course. The students taking higher courses were also trained in this way by being placed in the military hospitals.

Special and practical lectures were begun as a three years' trial for veterinaries joining the service.

The most important maneuvers which took place during the year were the following: In the circonscription of St. Petersburg (125 battalions, 72 squadrons, and 18 batteries), and in the circonscription of Warsaw, these maneuvers taking place near Brest-Litowsk (136¾ battalions, 113 squadrons, and 244 guns).

Measures were taken to improve the economical condition of the Cossack troops so as to encourage agriculture in the voiskos of Orenburg and the Ural River, raising of silkworms in the Don district, fruits and grape culture in the Kouban district, and the production of milk in the Ural district. New instructions define the situation of the men living in the voiskos and who are not Cossacks. The introduction of the "semstrio," or territorial administration, in the Don district is a question being studied, and the old Irtich lands, in the Altai district. were placed under the Siberian voiska.

To insure work to the men in the gun factories in case of lack of orders from the war department these places were allowed to accept private contracts under certain fixed conditions.

Concerning organization, the Seventh and Eighth Brigades of Oriental Siberia were created, each brigade of four regiments, the Seventh being under the commanding officer of Port Arthur, and the Eighth under the commanding officer of Vladivostok.

The results obtained from the formation of mounted couriers in 24 divisions during 1895 have resulted in new instructions being issued for the guidance of these detachments. Similar detachments will be created in all of European Russia.

As to artillery, the transformation of heavy batteries of corps artillery into light ones was continued, the composition of flying parks was elaborated for rapid-fire artillery, and a five years' trial was decided upon for a remount service for artillery similar to the system adopted in 1900 for the cavalry.

Changes were made in the effectives of pontoneer battalions. The battalion of the Oussouri Railway having been given two more companies was formed into two battalions called the Oussouri Railway Brigade and placed under the orders of the chief of staff for the Amoor circonscription. For the trans-Manchurian Railway a brigade of four battalions—the trans-Amoor—was formed. Lastly, the railway battalions were taken away from the engineers and put under the general staff.

In the Cossack troops the First Verkhneoudinsk Regiment and the First Tchita Regiment from the trans-Baikal voisko were formed into a brigade. Also the number of men to be supplied by this voisko has been made greater by a second-turn regiment, taking the name of Argoun Regiment. In time of war the Fourth, Fifth, Seventh, and Eighth regiments of the Siberian voisko will be formed into a division. By an Imperial decree, December 6, 1582, is the date of formation allowed the Cossack voiskos of Siberia and Semiretchie; also, a flag of "St. George" was given to each one of these voiskos.

The general staff was organized on a new basis and the general direction of the artillery was also changed.

The discharge of the special Finland troops resulted in the suppression of the military chancellery at the Finland senate and of the Finland war commissary. Matters pertaining to the recruitment of troops in Finland will either be attended to by the general staff of the circonscription or by the local administration.

The fortress of Libava passed from a second to a first class place. A viceroy commanding and a staff were given to Port Arthur.

Lawyers were attached to the military circonscription councils at St. Petersburg, Moscow, Vilna, Kiew, and Caucasus to direct judicial matters and give their opinion on all points of jurisdiction raised.

The commission for reorganizing the train has finished its work, which is now in the hands of the superior war council. The proposed reorganization will make the infantry, artillery, and engineer trains more mobile; the abolishing of cavalry trains diminishes the number of wagons which immediately follow the army; the system is strengthened by the creation of an army corps train. The subsistence trains have been enlarged and improved.

The trials made with traveling kitchens are finished and the committee has decided in favor of the "Brown type."

A commission has been formed to review the law on sanitary service in the army, so as to put doctors in charge of it and assure its efficiency by recruiting young men having a thorough knowledge of the laws of military administration.

Concerning military schools, flags were given to 11 cadet corps. Cadet schools for nobles, formed in 5 classes, are created so as to enable young noblemen to join the yunker schools and become officers.

A fifth class in the military school of Volsk was formed. A Finland cadet corps was formed. An annual indemnity of 150 rubles was allowed the parents of pupils who have not been able to find an immediate vacancy in other cadet corps or other instruction schools.

Two-year courses were opened for preparing cadet corps instructors; the courses were begun last autumn, and the professors graduating from them must serve at least 3 years with a cadet corps.

The reforms effected in the yunker school, making the course one of 3 years and enabling the pupils to graduate as officers, has made the number of candidates greater; therefore the examinations for admittance have been made more severe. The intention of these changes is to raise the standard of instruction among officers and to unify the system of instruction by having the studies of the yunker schools the same as those of the military schools.

The rules put into force during 1902 for buying all stores directly from private parties instead of by contract have given excellent results. Therefore, in 1903, boards were formed whose duty it is to buy all food directly from producers and avoiding all intermediaries.

Regulations concerning the cutting down of military correspondence were approved, and it is hoped they will be beneficial.

Espionage in time of peace is, according to the new law, punished with hard labor for life; but capital punishment can be inflicted for communication of important secrets.

In former years new instructions concerning the mobilization of artillery and infantry were published; during 1903 instructions concerning the mobilization of cavalry and mounted infantry were given out.

Census of horses and wagons was made in different districts in accordance with law.

Several expeditions were undertaken against the Khounkhouzes in Manchuria, who are becoming more and more annoying.

The fiftieth anniversary of the Crimean war is to be held this year; 100,000 rubles per annum will be given for 4 years to celebrate the defense of Sevastopol; the work was begun last year, and the jubilee fête of this siege will be held in the autumn of 1904.—*From La France Militaire, February 3, 1904.*

RUSSIAN STRENGTH IN THE FAR EAST.

According to the Internationale Revue, the Russian land force in the Far East at the outbreak of hostilities was as follows:

INFANTRY.

	Battalions.
European division at war strength	16
First to Sixth East Siberian Rifle Brigades of 4 regiments of 3 battalions each	72
Sixth and Seventh East Siberian Rifle Brigades (new)	20
First to Third Siberian Reserve Infantry Brigades	22
3 East Siberian Sapper battalions	3
4 railway battalions	4
Total	137

These battalions were brought up to a strength of 800 men each, by the assignment of reserve men in the district, making the strength of the infantry 109,600 men.

CAVALRY.

	Sotnias
Ussuri Cossack Brigade	21
First Verkhneoudinsk Regiment	6
Siberian Cossack Brigade	18
4 Siberian Cossack regiments	24
Total	69

About 10,000 men.

ARTILLERY.

	Batteries.	Guns.
Artillery of the European division	16	128
First and Second East Siberian Artillery Brigades	12	96
East Siberian Artillery Division	3	24
Siberian Reserve Artillery	6	48
2 Baikal Cossack batteries	2	12
Total	39	308

8,900 men.

FRONTIER GUARDS.

	Men.
2 Siberian frontier guard brigades	2,000

The total strength of the fighting troops should therefore amount to:

	Men.
Infantry	109,600
Cavalry	10,000
Artillery	8,900
Frontier guards	2,000
Total	130,500

RUSSIAN FIELD GUNS.

Till recently the Russian field artillery has been armed with (*a*) 3.42-inch guns, firing 15½-pound shells, with a muzzle velocity of 1,700 foot-seconds, and weighing 38 hundredweight in draft; several patterns of these guns were and are in the service. (*b*) 4.2-inch guns, firing 28-pound shells, with a muzzle velocity of 1,450 foot-seconds; weight in draft, 42½ hundredweight. (*c*) 6-inch mortars, firing 60-pound shells, with 760 foot-seconds muzzle velocity; weight, 41 hundredweight.

In 1897 Russia took up the question of rearmament of her field artillery and experiments were continued till 1900, when a pattern (3-inch caliber) was approved and large numbers (it is said 1,500 to 2,000) were ordered. The Russians do not seem to have been altogether satisfied with this gun, as it appears further trials were undertaken, and a new pattern was approved in 1902, and orders for the supply of this gun have also been given. No details have been published of this latter (1902 pattern) gun, and it seems doubtful if it has yet been issued for service. Details of the 1900 model are given in the table below. It does not seem to be, strictly speaking, a Q. F. gun; the gun recoils on the carriage, recoil being checked by a hydraulic buffer and by india-rubber pads, which also run the gun out again. These pads have been in use in the Russian artillery for some time and have been favored by General Engelhardt, who has been responsible for much of the Russian equipment. These pads are used in the 3.42 inch model 1895 gun carriage and in the 6-inch mortar to lessen the blow on the axletree.

The carriage jumps somewhat on firing, the sights recoil with the gun, there are no seats for the layer or other number to sit on, and there is no shield. Fixed ammunition with shrapnel shell only (it is believed) is employed with this gun. The breech mechanism is of the interrupted screw type.

As the 3-inch model 1900 guns are issued the 4.2-inch guns are withdrawn; it is also understood that the 6-inch mortars are regarded as out of date, and they are possibly being replaced. They were introduced after the war of 1877–8.

The Russian horse artillery is armed with a 3.42-inch gun, very similar to the field gun of that caliber; its muzzle velocity is, however, only 1,600 foot-seconds and its weight in draft is about 32¾ hundredweight. All Russian field batteries are 8-gun batteries; horse-artillery batteries have 6 guns only.

The following table gives comparison of the old and new model guns:

	3.42-inch Model, 1895.	3-inch Model, 190
Caliber ... inches..	3.42	[illegible]
Weight of shell ... pounds...	15¼	1
Number of bullets in shrapnel ...	200	2
Muzzle velocity ... foot-seconds..	1,700	1,8
Estimated rounds a minute ...	5	1
Range with time fuse ... yards..	4,500	6,0
Number of rounds in limber ...	30	36
Diameter of wheel ... inches..	55	5
Weight in draft ... hundredweight..	38	35 (37

—*From "Proceedings of the Royal Artillery Institution," April, 1904.*)

ALLOTMENT OF ARTILLERY.

A Russian army corps comprises two infantry divisions with 112 guns and a cavalry division with 12 guns. Each infantry division includes two infantry brigades (each brigade being composed of two regiments—eight battalions), and one field-artillery brigade which has 48 guns in one division and 64 guns in the other division of the army corps. The strength of a division may be taken as about 14,000 infantry and 48 (or 64) guns.—*From Proceedings of the Royal Artillery Institution April, 1904.*

SMALL ARMS.

The following is a description of the Russian "3-line" rifle, model 1891, at present in use by the Russian troops:

Caliber, 0.3 inches; muzzle velocity, 2,000 foot-seconds; weight of bullet, 213 grains; with bayonet, 9 pounds 12 ounces (bayonet always to be carried fixed, scabbards being left behind on service); five rounds in magazine; loading-system, clip.—*From Proceedings of the Royal Artillery Institution, April, 1904.*

NEW CORPS OF NAVAL CADETS.

The Russian Government contemplates the formation of two new corps of naval cadets—one at Vladivostok to provide for the requirements of the fleet in the extreme East, and the other at Nicolaieff for the fleet in the Black Sea. The period of study and training is to be seven years, so that the cadets may be thoroughly prepared for their future careers.—*From United Service Gazette, November 28, 1903.*

RUSSIAN MOVABLE KITCHENS.

Correspondents at the Russian maneuvers have often commended the Russian movable kitchens, which provide hot meals, well cooked, for the men almost immediately upon their arrival at camps or bivouacs. These kitchens are upon the Brown system, beginning in 1897 and continued in 1898 at Krasnoe-Selo and Beilstok. The Brown system was then provisionally adopted, and an Imperial decree of January, 1901, authorized these kitchens to be supplied in the ratio of one to each company, squadron, or battery. Trials meanwhile continued, notably during the Kursk maneuvers, and the kitchens were put to a severe war test in China. An official communication in the Russki Invalid announces that the kitchens have now been finally adopted. The cauldron or cooking vessel is double, its walls being severally of copper and iron, and the latter has a covering of asbestos for retention of heat. Beneath the cauldron is a little fireplace, enabling the heat to be regulated, and the products of combustion pass up the sides of the boiler and out through a chimney. The cauldron is hung upon springs and drawn by horses, and the cooking goes on while the troops are upon the march.—*From the Army and Navy Gazette, January 2, 1904.*

The following is a more complete description of the Russian movable kitchen:

A double cauldron, or boiler, the inner boiler being of copper, tinned inside, the outer boiler of iron, the two, however, forming but one whole. The outer boiler is covered inside and out with an asbestos lining, to prevent the outer case heating and to allow the inner boiler to cool rapidly after cooking. The boiler has a flat iron lid or cover, with an aluminum belt; during the march the water or food inside can not be upset, and can be stirred without raising the lid, which is also provided with a safety valve. Under the boiler is a fire box or oven, with doors and a moveable bottom. Thus the heat can be regulated at will. The products of combustion pass under the boiler, round its sides, so as to entirely envelop it, and escape through a chimney. The boiler is hung on the springs. A limber in front on two wheels carries two boxes for provisions and the cooking utensils; behind is an iron cage to hold the wood. The boilers hold 82 or 51 gallons each, according to the model. With a consumption of 27 kilograms, say one-half hundredweight of wood, the food is cooked on the march in about 2½ hours. The weight of the complete cooking cart, or ambulatory kitchen, is, infantry and artillery pattern, 1¼ tons; cavalry pattern, 1 ton.—*From The Broad Arrow, January 16, 1904.*

RUSSIAN NAVAL GUNS.

By Fred T. Jane.

Russian guns—the more modern ones at any rate, which are practically Schneider-Canets—have, like the Belleville boiler, and several other products of French genius, the reputation of being very "complicated." This is the verdict usually passed upon them by those whose technical acquaintance with artillery is confined to other types. Like the Belleville, their "complications," upon closer acquaintance, turn out to be the result of practical experience, and they are complicated only because novel. Actually, Russian guns are simple enough to work, and the only thing about them puzzling to those of other nationalities is the duplication of safety devices specially provided for sailors whose general average of intelligence is below that of the men of most other nations. In this thing alone do the newer Obuchoff models differ from the French Schneider-Canet pieces, on which they are modeled.

The result is some slowing of fire, because before the gun can be discharged at least two, and occasionally three, safety devices have to be loosed. This is essentially a drawback, regarding the guns as guns, but by no means so when the Russian bluejacket is taken into account. One man is usually detailed to release these safety devices; if he fails the gun can not be fired, as there is no contact. All chances of firing with the breech improperly closed is therefore avoided by human instead of automatic mechanism. As a Russian sailor is normally liable to be somewhat erratic, there is no question of the advantages secured.

The standard guns in the Russian fleet are as follows:

The 12-inch of 40 calibers; weight, 59 tons; muzzle velocity, 2,500 foot-seconds; muzzle energy, 32,000 foot-tons. This piece has a nominal penetration of 15½ inches Krupp cemented at 3,000 yards, with capped A. P. shell, the same as that of the United States Mark III, 10-inch, built for the *Washington* class. It is mounted in the *Retvizan* and *Czarevitch*. For the *Borodino* class a 64 ton 12-inch has been designed, but it is doubtful whether it exists as yet. It has the same velocity (service), but fires a 1,200-pound projectile instead of a 732-pound one, and it has a correspondingly increased energy. The nominal velocity is 3,000 foot-seconds.

The *Poltava* class, the *Sissoi Veliky*, and all other battle ships carrying 12-inch guns, down to and including the *Sinope*, carry a 35-caliber 12-inch gun. Its weight is 56 tons, its initial velocity 1,942 foot-seconds (service), energy 19,200 foot-tons, shell 732 pounds. It is, of course, an old-type gun. Its penetration is, for a 12-inch gun, very small. The velocity is poor, and the piece is considerably inferior to the Japanese 12-inch gun. The rate of fire of this piece is slow.

A more powerful piece and a better gun is the 10-inch of 45 calibers, carried by the *Peresviet* class and the *Apraksin* and *Rostislav*. Its ballistics are inferior to those of the United States 10-inch Mark III, but it is superior to the *Iowa's* gun, being able to penetrate 13-inch Krupp armor at 3,000 yards. As a gun it is the finest heavy piece in the Russian service, and its rate of fire and accuracy are both good. It was seriously contemplated a few years since to have this piece only, its results being so superior to those of the 12-inch 35-caliber gun. It weighs 38 tons and has a velocity of 2,500 foot-seconds at the muzzle. It keeps up the velocity well, but the exact weight of the projectile is not known. It is somewhere about 500 pounds. Velocities of or over 3,000 foot-seconds have been accredited to it, but these are merely trial results. Its defect is that the penetration is poor at long ranges, where the velocity drops and the relatively light projectile tells against it.

The *Gromoboi* and *Bayan* carry a 45-caliber rapid-fire 8-inch gun. Its mechanism is somewhat tardy and the rate of fire only about once a minute, but the gun is excellently constructed and has very fine ballistics. It weighs 20 tons, fires a 250-pound projectile, and has velocities up to 3,000 foot-seconds, though the service velocity is lower than this. Its service penetration is about 8 to 9 inches of Krupp armor at 3,000 yards. The new 7-inch is the United States gun it most resembles in power, but its energy is better on account of the heavier projectile.

The 6-inch rapid-fire is of 45 calibers and fires shell of both 111 and 88 pounds weight. The service velocity is 2,400 foot-seconds and the weight of the gun about 7 tons. It is nominally equal to 6 inches of Krupp armor at 3,000 yards. Its rate of fire is moderate. In the latest ships it is mounted in a completely circular shield inside the casemate. The *Czarevitch* carries this gun on a twin mounting, as do the *Poltava* class. This mounting has given very satisfactory results as such mountings go. They always leave something to be desired. The 4.7-inch is a piece of 45 calibers about on a par with corresponding pieces in other navies.

All these guns have the Schneider-Canet breech mechanism, which is not equal to the Welin for rapidity, though less liable to derangement. A Russian innovation is a carrier below the breechblock, so that when the latter is opened its weight is not thrown on the hinges. The mounting details and rifling follow the Canet system.

Most Russian ships have electric hoists. Their guns all use nitrocellulose smokeless powder. The projectiles are capped armor-piercing shell and common shell. No solid shot is used, as the Russians claim to find their capped armor-piercing shell equally penetrative. High explosives are not yet introduced. Fuses are the weak point in Russian gunnery.

Newspaper reports have made the aiming very bad, but enough account was not taken of the range at Port Arthur. There are some very good shots in the Russian fleet and the average gunnery officer is efficient. He is able and often acts as captain of a gun, as do other officers. Where the Russian fleet came to grief was in the fact that gunnery was totally neglected by Admiral Stark, who devoted his time to battle evolutions of the parade-ground type.

In conclusion, mention may be made of a few other guns in the Russian service. A 9-inch piece exists in some small coast defenders and armored gunboats. It is an obsolete gun of which little is known and still less is worth knowing. There is also an old 8-inch in the *Rossia* and *Rurik*. It is 35 calibers long and its highest velocity is 1,922 foot-seconds. Its penetration is poor and its firing slow; it is less penetrative in fire than modern 6-inch guns.—*From the Scientific American, May 28, 1904, by permission.*

SPAIN.

THE SPANISH ARTILLERY.

The new Spanish gun is being made by Vickers Sons & Maxim. It is a shielded Q. F. gun, on long-recoil carriage, with a buffer and double set of telescopic running-out springs fixed on top of the gun. It has the independent line of sight, with a telescopic sight working through a small hole in the shield.

This gun is more powerful than the Krupp and Ehrhardt equipments, having a muzzle velocity of 1,706 foot-seconds as against 1,640, but the gun in action is nearly 4 hundredweight heavier. The principal dimensions and weights are given below:

Caliber	millimeters	75
Muzzle velocity	foot-seconds	1,706
Weight of fused shell	pounds	14.33
Length of gun	feet	7⅜
Length of trail	do	7¼
Weight of gun and limber in marching order without men	pounds	3,550
Weight of gun in action	do	2,350

— *From Proceedings of the Royal Artillery Institution, February and March, 1904.*

SWEDEN.

REORGANIZATION OF FIELD ARTILLERY.

When Sweden adopted a new R. F. gun for her horse artillery, the 2 batteries of 6 guns each were transformed into 3 batteries of 4 guns each.

The same changes will be made as regards the new R. F. field batteries, 2 regiments having already been thus transformed in October last.

Instead of groups of 3 batteries of 6 guns each, each regiment will be composed of 3 groups of 3 batteries each, each battery containing 4 guns. The total number of guns remains the same, but the number of batteries is greatly increased. The organization will eventually be 56 field batteries; 3 horse batteries, 10 reserve batteries, and 20 depot batteries. The last two categories do not exist in time of peace.—*From La France, Militaire, January 30, 1904.*

MISCELLANEOUS.

THE INFANTRY ATTACK.

According to the Militär-Wochenblatt, a spirited controversy is taking place in Germany in regard to the best method of employing infantry in the attack.

The consensus of opinion seems to be that the victory is to be sought for in fire effect, that practically all available forces should be employed to obtain the necessary superiority required, and that the victory must practically be won by the bullet before attempting "shock tactics" with the bayonet.

A divergence of views exists as to the proper spacing of men in the firing line. Very extended formations, after the manner of the Boers, are advocated by one party, mainly on the ground that the experiences of the English in the South African war compelled them to resort to the Boer method of fighting.

The British drill book provides for an extension of from 5 to 15 paces, as compared with the German of 1 and 2 paces.

It is contended on the other hand that experiences in the South African war can not be applied to conditions on the Continent of Europe, that there the armies will be so large that it will be impracticable to make use of extended formations, and that fire control can not be obtained with that kind of formation.

It is argued that overwhelming fire effect can be produced only by the use of dense lines.

TACTICAL LESSONS FROM THE BOER WAR.

[Extracts from an article by General von der Goltz, on "Military lessons of the South African war," published in the National Review of November, 1903.]

As regards tactics, the lessons from the Boer war applicable to European conditions are easier to find than is the case with strategy. In the effect of firearms and the manner of fighting of infantry and artillery fresh developments have actually appeared. In Europe they have been looked for principally in the manner of skirmishing. Much has been written on the subject. The world was astonished at the fact that quite a small number of Boer skirmishers, who had occupied any particular "kopje," were frequently able to drive back English regiments, who advanced, according to European principles, with thick firing lines and supports, and who were not lacking in determination. Some have started imitating this, splitting up the large masses of infantry into small parties, which are to creep and crawl along the ground to the enemy after the Boer methods, somewhat as we used to do formerly in fortress warfare. They forget the difference which exists between the two theaters of war. European infantry when fighting have as a rule to make their way through waving cornfields, on which the ears are higher than the man; likewise through gardens, hedges, and plantations of every sort. In 1870 war broke out at a particularly late time of year, consequently the fields were already bare, and the treeless hills of Loraine admit to a certain extent of comparison with what is described at Modder River and Magersfontein; but that was an exception. In 1807, 1813, 1815, 1859, and 1866 the big battles took place in the summer. In cornfields, through vineyards, and hop gardens the creeping forward is not possible, or all supervision and control over the men would soon be lost. Here and there in open country, on bare hills among rocks or underwood, the Boer method can, of course, be employed. But these are exceptions.

With the accumulation of great masses on European battlefields this filigree work in the skirmishing will not have sufficient space. Everything is too crowded. We should therefore learn the details from the Boers—the great independence of the soldier in the battle, the cleverness and skill in taking advantage of the ground, the practice of the eye in distinguishing objects, the calmness in weighing the chances of hitting, the sure hand and the well-judged shot. We must not, however, formulate any system or scheme from the Boer method of fighting, otherwise we shall also fall into their mistakes.

The effect of the South African experiences must be sought deeper, not so much in appearances and on the surface. The Boer war will, from one point of view, be an epoch in the history of the art of war. It has shattered for the first time the belief in the certain means of victory to be found in the massing of troops which has come down to us from the campaigns of Napoleon. Arms were at that time rough and imperfect, one rifleman was as good as another. It was only a matter of collecting as many as possible in a small space in order to be the stronger. Napoleon's mastery in troop leading has been recognized in his rapid assembling of numerous battalions and hundreds of cannon at one point of the battlefield. Since then we have emulated him in this. The battles of 1870 prove it, and in theoretical exercises, in staff rides, and at war games we ran the danger of relying on a stupid counting of numbers in order to decide the victory. This error has also been partly accountable for the unjustifiable phases of battles which were already decided before they were begun. That has changed. *The South African war has taught that mere mechanical massing of troops has no effect in the battle of to-day. This is perhaps the most important result, the most striking revelation which it has brought us, and the one which will probably exercise the greatest influence on the development of the art of war in Europe.* * * *

The bullet of the modern infantry rifle, with its flat trajectory, will easily go through 4 or 5 men who are advancing one behind another. The leading man is no longer a protection to the man behind him, the latter no longer a support to the former. The close-formed masses of infantry in deep formation will sometimes have less prospect of capturing an enemy's position than a line of skirmishers advancing skillfully and boldly, and well led.

The fact observed in South Africa that the troops in support, which should reinforce the firing line in front, hardly ever reached them in open country, points to an abandonment of the ordinary system. When the ground offers cover the supports can conceal themselves there till they are wanted; otherwise they are better in front in the firing line. In the long-fire fights the Boers frequently withdrew part of their men in order to steady their nerves and to allow their blood and their weapons to cool down. That appears desirable.

We have previously sought to get as many rifles in the front line as possible, in close-crowded firing lines. That will still be correct in the final decisive moments. But till that time we must be moderate; for African experience shows that, by crowding up the lines a time comes when the losses are so heavy, the position of the individual rifleman so uncomfortable, that any increase in numbers no longer signifies an increase of power. It were better to take care for an ample supply of ammunition, in which matter the Turks at Plevna showed themselves unsurpassed. The quick-firing rifle always admits of an increase in intensity of fire without the sacrifice of more men. These, however, are details, the solution of which anyone can think out for himself. The important point for us is the fact that, by massing *only* but little is achieved, and that it is the method of handling the forces in battle, and how the individual rifleman has been taught to conduct himself, which are more important. That affects, and in no small degree, the future training of our soldiers.

It was similar with the artillery to what it was with the infantry. With them the disproportion in numbers was often more astonishing. All European armies have latterly considerably increased their artillery, and our gunners wish no longer to deal with single batteries; they want to regard brigade, divisions, or even regiments as the smallest units, which must always be kept together. The Boers in their poverty dealt with single guns. The astounding effect which one modern gun produces on the practice range has for a long time led us to expect everything of the artillery preparation, or at all events, too much. Whenever an attack was repulsed the critic decided with the greatest regularity that the necessary preparation by artillery had been wanting. This reproach can not be brought against the English. They always took care to bring their artillery into action, and with vigor, before the infantry advanced toward the enemy. A reliable eyewitness who was in the 1870 war and fought in December at Baugency, where the artillery duel was especially vehement, having regard to the conditions of those days, affirms that the cannonade at Colenso raged far more violently. The slopes of the Tugela, where the Boer riflemen lay, were rapidly hidden by a dense cloud of dust and splinters of stone when the shots began to strike. The result, however, was insignificant. Here and there a Boer behind the rock was slightly wounded. When the English infantry approached, in spite of all the bombardment by the artillery, the destructive infantry fire rattled out of the dust against them *in no wise weakened.* That gives us something to think about. We can no longer count on relieving the infantry of the most difficult part of the work by the introductory cannonade, however effective our gun may be.' Both arms must work in close cooperation, one with the other. Only when the infantry approaches the concealed enemy, so that they are forced to stretch their heads out of their trenches and pits like tortoises out of their shells, can the artillery make use of its shrapnel fire effectively and successfully. At the same time single Boer guns from well-chosen positions were frequently able to carry on the fight with the closely formed English batteries long and successfully. Thus in this matter also the problem is not solved by mere massing. The damage done by the enemy's projectile increases in progressive measure the closer we have our guns. Here also there is a limit, when an increase in number betokens no increase of strength but only an increase in losses.

BARREL-RECOIL FIELD GUNS.

The following is a short summary of the present position of barrel-recoil field guns among the European powers:

France.—The French model 1897, a barrel-recoil field gun with protective shields, was designed by Colonel Deport and built in the Government workshops at Bourges.

Norway experimented with barrel-recoil guns from St. Chamond, Schneider-le-Creusot, and Ehrhardt, Dusseldorf, and decided in favor of the last named, ordering 22 batteries. Its great weight, viz, 2,209 pounds, makes the task of providing the gun with shields (a question which has only been considered after the guns were ordered) a difficult one.

Sweden.—When trials began in Sweden, Cockerill and Krupp were the only competitors. The two French firms, Schneider and St. Chamond, who wished to compete, found it impossible to fill the specification as to weight of the unlimbered gun. The Krupp material was adopted. For the mounted artillery (3 batteries of 4 guns each), Krupp's short recoil gun with spring spade, and for the remainder of that arm Krupp's barrel-recoil gun was adopted; 72 of the latter and 66 ammunition wagons were ordered in Essen.

Denmark.—The selection trials began in 1901 and were concluded in 1902. Schneider, Krupp, Ehrhardt, and Cockerill competed. Krupp's barrel-recoil gun was adopted, and in October, 1902, an order for 128 guns with ammunition wagons was given, which should be ready on April 1, 1904.

Switzerland.—The Swiss trials were most exhaustive; nearly all the leading gun factories of the world competed. Cockerill, Ehrhardt, Krupp, Schneider, and Skoda, in Pilsen, Austria, exhibited their latest models. St. Chamond had also been invited and had accepted the invitation to compete, but did not deliver its gun in time, and consequently did not participate in the trials. Later on this gun was inspected at St. Chamond, but without result. Krupp's barrel-recoil gun was successful, being considered far in advance of the other competitors. Switzerland ordered 340 of these guns from Essen.

Turkey sent several commissions to Krupp's and on two occasions also to other works, and then decided for Krupp's barrel-recoil gun, ordering 184 guns (16 batteries of 6 and 22 batteries of 4), with all accessories, i. e., ammunition and battery wagons, harness, and an adequate supply of ammunition.

England has been experimenting for years, beginning before the South African war, and continuing after it, and has now chosen a barrel-recoil gun with shields, which combines the best characteristics of the designs of the two private firms of Armstrong and Vickers. Both these firms are at present busy with a large contract, and it is hoped that the artillery, or at least the greater part of it, will be armed with the new gun for the next maneuvers.

Spain, after long trials, two years ago ordered 120 guns of an intermediate design at St. Chamond and at Krupp's which were delivered in 1902. The carriages carried hydraulic brakes and return springs with spade. At the same time 24 barrel-recoil guns were ordered from the Creusot works, but repeated difficulties arose when the guns were presented for approval. Last spring the Spanish Government invited a new competition for barrel-recoil guns, but has now given up the idea of experimenting at home. A special commission of inquiry has been sent to France, England, and Germany.

Portugal has also lately sent a special commission to different countries to gather information from the prominent gun makers. The commission has now returned and delivered its report, on the strength of which it has been decided to make the final trials with the proposed gun models in Portugal itself. The proposed constructions are those by Schneider and by Krupp.

Belgium.—Competitive trials are, at the present time, being conducted with barrel-recoil guns from Cockerill, St. Chamond, Krupp, Ehrhardt, and Skoda. Cockerill has also entered one gun of a rigid recoil design from a battery ordered three years ago, and under trial now by the Belgian artillery. There is, however, little hope of this gun being adopted. A majority of the board has declared for the barrel-recoil system. It is still doubtful which of the competing designs will be selected.

The Netherlands.—The Government has brought in a bill for the rearmament of the Dutch field artillery with barrel-recoil guns after Krupp's design. The report states that since the trials in which Krupp, Ehrhardt, and Schneider competed, the conviction has been arrived at that "Krupp's 3-inch barrel-recoil gun decidedly deserved the preference, and was to be recommended in every respect for adoption." Two hundred and four guns and 408 ammunition wagons, and 200 more ammunition wagons for the artillery park are required, besides the ammunition, battery wagons, accessories, the total cost amounting to 7,000,000 gui'ders; the latter are, as far as possible, to be made in the country; 425,400 guilders are asked for this year, principally to pay for a complete battery for practice on the proving grounds of Oldebrock.

Italy has nearly completed 540 3-inch field guns after a design similar to Krupp's short recoil gun, but has had many difficulties regarding the delivery by the Italian workshops. In the meantime, the barrel-recoil system has come into favor there as elsewhere; in all probability, therefore, the rest of the Italian artillery will not be armed with the former gun. Trials with barrel-recoil guns are going on, but have not yet been concluded.

Germany.—Trials are now going on to alter the field guns, model 1896, into barrel-recoil guns. Twelve batteries of altered guns both without and with shields were used in the last imperial maneuvers, and have given satisfaction.

Austria.—The barrel-recoil system has been adopted in principle, but the special model has not yet been decided upon.

Russia has been experimenting for years, and has for the time being adopted a model with glycerin brake and india-rubber return springs lodged in the body of the carriage, after a design by General Engelhardt. A large number of guns, it is said 1,200, have been ordered in the workshops of Putilow. This model is, however, not yet generally adopted. It would rather appear that an improved type will in the end be adopted for the remainder of the Russian artillery.

Roumania.—In 1898–99 competitive trials were made with five different models. One was designed by the Roumanian Colonel Perticari, with a Darmancier carriage; the others were from St. Chamond, Krupp, Schneider, and Hotchkiss. In 1900 the trials were interrupted, and later taken up again. At present a battery of Krupp barrel recoil guns is being experimented with.

Servia apparently also contemplates a rearmament of her field artillery. It is stated that trials will be made with a battery ordered from Skoda before the death of King Alexander, and probably, too, with other models.

Bulgaria and *Greece.*—It is not known whether these countries have taken any steps as yet for the rearmament of their artillery, at least nothing of the kind has been published.

To sum up: Eight among the nineteen governments mentioned have decided the gun question in favor of the barrel recoil gun; nine others have partly concluded it, or are still engaged in trials; two have not yet done anything in the matter. Among the eight which have arrived at a decision, only two—England and France—were able to draw from models designed at home; the other six had to fall back on foreign gun factories, and in all these cases the German makers have been victorious. In five of them the Krupp Company, and in the case of Norway, where Krupp did not compete, Ehrhardt-Dusseldorf.—*Précis from Jahrbücher für die deutsche Armee und Marine in Journal of the Royal United Service Institution.*

DATA REGARDING LATEST TYPES OF FIELD GUNS OF VARIOUS COUNTRIES.

Nation.	Weight on gun wheels limbered up.	Weight on limber wheels limbered up.	Total with gunners.	Number of gunners.
	Cwt.	*Cwt.*	*Cwt.*	
America, 1903	23	19¼	42¼	4
Austria, 1903	23	21	44	3
Switzerland, 1903	22¼	19¼	41½	4
Russia, 1900	22¼	20¼	42½	3
France, 1902	21¾	20¾	42½	3
Spain, 1903	23¼	17¾	41	3

The weight of the gunner is taken in each case at 1½ hundredweight, and 1 hundredweight is added for kits and marching equipment on the limber. America and Switzerland carry 2 gunners on the axletree and 2 on the limber; France, Russia, and Spain carry 3 on the limber and none on the gun. Austrian equipment consists of the old heavy B. L. bronze gun, remounted on a Q. F. carriage. The gun is 1½ hundredweight heavier than the 1903 Krupp and Ehrhardt guns.

The French equipment was altered in 1902 by adding the shield, taking off the axletree numbers, and putting 3 men on the limber.

The proportion of muzzle energy to weight of gun and carriage varies considerably, as is shown in the following table:

	Weight of gun in action.	Muzzle energy.
	Cwts.	*Foot-tons.*
France	21¾	322.9
Russia	22¼	380.9
Switzerland (Krupp, 1903)	19¼	250.6
America (Ehrhardt, 1903)	20	266.6
Elswick, 1902	24	328.3
Spain (Vickers-Maxim, 1903)	23¼	288.4

It will be noted that the Russian gun is far more powerful in proportion to its weight than the others. This is partly accounted for by the fact that the gun has no shield, all the weight being utilized in the power, partly by the extra long recoil (it is stated on doubtful authority to be 1½ meters), which somewhat reduced the maximum rate of fire.

Of the remainder the French gun easily surpasses the others. Even allowing for a saving of 1 hundredweight by the use of compressed-air gear, which is not free from defects, the figures show that other nations have still something to learn from the French designers.—*From Proceedings of the Royal Artillery Institution, February and March, 1904.*

TABLE OF BUDGETS OF THE ARMY AND NAVY OF THE PRINCIPAL MILITARY POWERS' OF EUROPE FOR THE YEAR 1903.

ARMY—ORDINARY BUDGETS.

Country.	Administration.	Technical services.	General staff and services of general staff.	Intendance and special services.
	Francs.	*Francs.*	*Francs.*	*Francs.*
Germany[a]	4,574,768	1,331,470	9,529,346	9,198,804
Austria-Hungary	4,748,634	214,582	5,231,751	4,285,502
Belgium	692,415		1,133,344	287,883
Bulgaria				
Denmark				
Spain	3,428,624		2,239,485	9,017,595
France	4,517,660	1,939,945	11,775,554	15,264,617
Great Britain	8,450,000		7,002,500	44,846,250
Greece				
Italy	2,447,450	453,100	4,034,600	4,344,700
Norway				
Netherlands	602,887	149,306	433,608	1,017,202
Portugal	136,120	12,500	612,263	1,128,741
Roumania	784,732	107,432	1,701,975	831,785
Russia	58,863,284			
Servia				
Sweden				
Switzerland	1,221,168	479,075		1,383,665

Country.	Instruction.	Pay.	Rations.	Forage.
	Francs.	*Francs.*	*Francs.*	*Francs.*
Germany	11,168,684	213,248,575	287,734,985	
Austria-Hungary	4,526,873	105,897,129	87,497,048	
Belgium	240,075	23,835,237	10,175,688	
Bulgaria				
Denmark				
Spain	2,627,676	109,619,566	15,411,768	
France	11,314,623	243,535,891	101,896,779	67,205,302
Great Britain	5,192,500	298,007,500	110,662,500	30,342,500
Greece				
Italy	2,918,700	125,845,300	14,182,800	18,176,800
Norway				
Netherlands	775,499	20,875,911	5,271,105	2,785,072
Portugal	917,771	12,106,443	3,859,854	2,228,428
Roumania	725,469		23,107,671	
Russia	44,462,868	294,745,696	200,864,540	79,601,984
Servia				
Sweden				
Switzerland	12,652,778			

[a] Includes the budgets of Prussia, Saxony, Wurttemberg, and Bavaria combined.

TABLE OF BUDGETS OF THE ARMY AND NAVY OF THE PRINCIPAL MILITARY POWERS OF EUROPE FOR THE YEAR 1903—Continued.

ARMY—ORDINARY BUDGETS—Continued.

Country.	Sanitary service.	Transport.	Clothing, arms, bedding, barracks, and camps.	Remounts.
	Francs.	*Francs.*	*Francs.*	*Francs.*
Germany	14,809,831	13.084,087	45,401,654	22,886,081
Austria-Hungary	9,272,319		53,759,939	7,106,742
Belgium	1,314,035	914,729	6,361,765	1,007,850
Bulgaria				
Denmark				
Spain	3,007,525	1,344,933	[a] 2,195,365	2,288,085
France	8,968,944	15,297,629	68,085,523	15,918,107
Great Britain	14,550,000	41,375,000	55,612,500	6,500,000
Greece				
Italy	5,731,400	4,696,750	23,310,900	4,374,000
Norway				
Netherlands	1,765,840	681,080	6,833,738	496,839
Portugal	1,152,170	510,000	1,568,346	277,000
Roumania	1,031,487	680,584	2,772 000	940,315
Russia	18,285,224	47,569,996	86,135,220	
Servia				
Sweden				
Switzerland			5,780,012	2,699,856

Country.	Artillery establishments and material.	Engineer establishments and material.	Various expenditures.	Total of ordinary budgets.	Extraordinary budgets.
	Francs.	*Francs.*	*Francs.*	*Francs.*	*Francs.*
Germany	67,732,015	6,985,343	9,326,537	[b] 717,007,180	80,411,336
Austria-Hungary	10,510,070	10,257,907	1,338,083	[c] 304,646,579	29,381,510
Belgium	2,148,445	1,585,000	218,949	[b] 49,915,415	[d] 5,393,296
Bulgaria				23,310,362	
Denmark				15,085,473	639,390
Spain	5,600,000	4,809,000	360,000	[e] 161,949,622	[d] 14,220,082
France	28,636,191	16,846,650	46,006,827	[f] 656,740,242	31,063,000
Great Britain	109,952,500	66,005,250	45,047,775	[g] 843,546,775	
Greece				18,397,021	
Italy	6,846,000	5,544,400	1,024,200	[h] 223,931,000	16,000,000
Norway				18,962,090	4,900,000
Netherlands	4,431,928	2,063,460	1,001,154	[i] 49,174,579	[d] 3,866,667
Portugal	2,471,327	98,500	189,413	[b] 27,268,866	578,879
Roumania	3,193,996	290,000	1,381,000	[e] 37,548,446	
Russia	58,848,292		430,318,120	[j] 1,319,695,224	
Servia				18,474,344	
Sweden				52,086,440	19,907,860
Switzerland	1,484,968	1,026,035	1,824,700	[k] 28,552,257	

[a] Expenditures for clothing are included under heading "Pay."

[b] Does not include the gendarmerie.

[c] Does not include budgets for the national defense, which amounts to 65,895,860 francs for Austria (including the gendarmerie), and 45,114,180 francs for Hungary.

[d] Exceptional expenses are included in the ordinary budget.

[e] Includes gendarmerie.

[f] Includes 38,291,349 francs for the gendarmerie, also 27,757,205 francs for colonial troops, which are attached to the war ministry.

[g] Includes extraordinary credits for the Transvaal war, the expedition to China and Somaliland, as well as bounties granted to the auxiliary forces. The normal ordinary budget amounts to 677,121,775 francs.

[h] Includes 29,500,000 francs for the gendarmerie.

[i] Includes 1,719,627 for the gendarmerie.

[j] Includes 20,764,264 for the gendarmerie.

[k] There should be added to the war budget the military expenditures included in the budgets of the interior and finances, amounting to 1,665,366 francs, and those which pertain to the cantons, valued at about 1,600,000 francs. The total military expenditures thus amount to 31,817,623 francs.

TABLE OF BUDGETS OF THE ARMY AND NAVY OF THE PRINCIPAL MILITARY POWERS OF EUROPE FOR THE YEAR 1903—Continued.

NAVY.

Country.	Ordinary budgets.	Extraordinary budgets.
	Francs.	*Francs.*
Germany	116, 835, 240	176, 722, 337
Austria-Hungary	36, 918, 676	14, 958, 493
Belgium		
Bulgaria		
Denmark	9, 625, 858	628, 670
Spain	35, 941, 702	
France	313, 474, 524	
Great Britain	861, 437, 500	
Greece		
Italy	100, 124, 102	9, 208, 576
Norway	3, 633, 000	2, 548, 000
Netherlands	33, 017, 550	
Portugal	[a] 20, 939, 295	
Roumania	1, 271, 554	
Russia	462, 524, 964	
Servia		
Sweden	16, 612, 284	10, 946, 716
Switzerland		

[a] Includes the budget of the colonies.

—*From The Bulletin de la Presse et de la Bibliographie Militaires, January 15, 1904.*

A NEW ALUMINUM ALLOY.

According to the Scientific American, a German civil engineer, Mr. Walter Rubel, has discovered a new alloy of aluminum, which he calls "meteorit," and which is said to possess many useful properties.

The new metal is a chemical compound of aluminum and phosphorus, and, according to the quantity of phosphorus used in the alloy, varying degrees of hardness may be given to it. The metal is very dense, highly polishable, and is not affected by acids. It has the same specific gravity as aluminum—that is, from 2.6 to 2.8.

It can be soldered and galvanized as easily as other metals, and can, therefore, be given any color desired, a thing that has been impossible heretofore with aluminum. It has been rolled into sheets of from 3 mm. to 0.006 mm. in thickness.

The German arms and ammunition factories in Karlsruhe, as well as the Swiss and Russian governments, are now making cartridge shells of meteorit.

THE PERSPECTARTIGRAPH.

The Scientific American, April 2, 1904, contains a description of a very novel drawing instrument to which the above name has been given.

The idea of the instrument is to enable a person of little or no previous instruction to draw in perspective mechanically.

The instrument when set up consists of a tripod with drawing table, with two uprights attached to opposite sides of the table, at the upper end of which uprights is mounted a transverse rod that can be easily turned about its axis.

Near one end of the rod and within a ring which forms a part of the rod a telescope is mounted on two vertical pivots, thus allowing the telescope a motion about a vertical axis, while the motion of the rod itself permits the telescope to be revolved about a horizontal axis.

Pivoted near the center of the transverse rod and also connected to a frame which in turn is connected with the telescope is an extensible rod which reaches to the table below, and on the lower end of which is carried a pencil.

By moving the pencil with the hand so as to cause the cross hairs of the telescope to follow the lines of any object to be drawn in perspective the pencil itself will describe on the paper the required lines.

It is stated that the operation of the instrument is exceedingly simple and very readily learned. The inventor is Mr. Otto Eichenberger, of Geneva, Switzerland.

TORPEDOES.

The record for firing torpedoes from submerged tubes used to stand at about 1 per 5 minutes. Recently, owing to improvements in firing, it reached a rate of 3 in 2 minutes. Now it stands at 5 in 50 seconds, a figure that sounds almost impossible. With rapid-fire torpedoes accuracy will become of less importance, for a fleet will be able to make the sea full of them.—*Engineer, May 13, 1904.*

THE WELLAND CANAL.

The shipbuilders on the Great Lakes are looking with interest at the plans of the Canadian government to enlarge the Welland Canal. The extreme length of vessels permitted at the present time by the canal to pass between Lakes Erie and Ontario is 255 feet. With the Welland Canal locks enlarged to twice that size, or even 100 feet longer than present dimensions, lake-built boats with a carrying capacity of 5,000 tons or over would readily get to the coast.—*Engineer, May 13, 1904.*

LIST OF TRANSLATIONS RECEIVED TO DATE FROM VOLUNTEER TRANSLATORS (OFFICERS).

[Arrangement of articles is according to system in use in the library of the Military Information Division, General Staff.]

1. MILITARY TRAINING.

Country.	Title.
France	Initiative on the part of subordinate officers.
	The present ideas of tactics in France from the quarterly pamphlet of the German general staff.
	Study of counter attack.
	Study of marches and maneuvers in the high mountains in winter.
	Revolution in the art of war.
	Lectures on field service.
	Crossing of partially frozen rivers.
	Practical manual for reconnaissance of the terrain.
	The artillery patrol, translated into French from the German by E. A.
	The grand maneuvers of the Southeast.
	Military instruction and education.
	Moral education of the soldier.
	Agricultural instruction in the army.
	Military instruction at the central school.
	Regulations concerning admission to the superior war school in 1904; ministerial decrees of war, 1903.
	The superior war school.
	Schools of application for artillery and engineers.
	Decree of the French Government July 13, 1903.
General	Transmission of orders in the field.
Germany	German tactical ideas (influence of the South African war).
	The offensive and defensive in warfare.
	The conduct of armies in war.
	Some German ideas on tactics.
	Siege infantry regiments and siege divisions.
Great Britain—South Africa.	Value of fortified positions in campaign with reference to experiences during the South African war.
Russia	The Russian imperial maneuvers at Pskof, 1903.

2. MILITARY SITUATION.

Argentina	Report of the minister of war for Argentina.
Belgium	News from the Belgian army.
	Notes from the Belgian army.
Brazil	Brazilian lines of communication.
	Note regarding the report of the secretary of war.
	Report of the minister of war for 1902. Brief résumé.
	The boundary question between Brazil and Bolivia. (The Acre territory.)
Chile	The Chilean army.
China	The Great Siberian-Manchurian Railway.
	A tour of southern Manchuria.
	Chinese troops and their instructors.
	The army of North China.
Cuba	The Spanish-American war. Nuñez.
	The Spanish-American war. Armee Et Marine.
Denmark	Copenhagen as a fortress.
France	Coast defense of France.
	The army of to-morrow.
	The Colonial army.
	Military evolution in Germany and France.

LIST OF TRANSLATIONS, ETC.—Continued.

2. MILITARY SITUATION—Continued.

Country.	Title.
France-Bizerta	Stragetical importance of Bizerta.
France-Africa	Algeria and the assimilation of the native Musselmans.
Germany	Jena or Sedan?
	The German danger.
General	News from the armies.
Japan	The power of Japan.
Mexico	The Mexican army.
Russia	The Siberian Railway and the Russian field of work.
	Geography. The Russian coast territory in East Asia.
	Russia's strength in eastern Asia.
	Russia on the Pamir.
Servia	The Servian army.
Switzerland	The army of the Swiss Confederation.
Venezuela	Venezuela affairs.
	Regarding Venezuela.

3. ADMINISTRATION.

Switzerland	The military organization of the Swiss Confederation.
Russia	Regulations of the Russian general staff.
General	The intelligence service in European armies.
Germany	Military criminal law, disciplinary power, courts of honor in the German army.
Argentine	Compulsory military service, Argentina.
France	Promotion of officers.
	Officers of the general staff of the reserve and of the territorial army.

4. SUPPLY AND TRANSPORTATION.

France	Supplying potable water to armies in the field.
	The manufacture of preserved meats.
	Examination of meat for the troops.
	The thoroughbred horse in the army.
	The proposed service shoe for the infantry.
	The new uniform.
	Notes on infantry equipment.
	The recoaling of war ships.
France—Colonies	Horse breeding in Madagascar.
Great Britain	Pony breeding in England.
Germany	Feeding troops in time of war.
	Employment of transport troops in fortress, warfare.
Spain	Disablement of locomotives in campaign.
Norway	The new uniform and equipment of the Norwegian infantry.
Russia	New method of supplying the Russian frontier guard (with horses).
Switzerland	Sapper equipment.
Roumania	Supply of mounts to officers in Roumania.
General	Improvement of the subsistence service in the great armies.

5. CAVALRY AND INFANTRY.

Austria-Hungary	Trials of new models of pistols in Austria-Hungary.
Belgium	The employment of cavalry before the fight.
	Belgian targets.
China	Mounted company of the Chinese expedition (relief).
France	Infantry against cavalry.
	Fire instruction in France.
	Experimental data concerning ricochets.
	Devices intended to limit the angle of fire of small arms.
	The cavalry sharpshooter.

LIST OF TRANSLATIONS, ETC.—Continued.

5. CAVALRY AND INFANTRY—Continued.

Country.	Title.
France	Cavalry armament.
	The automatic carbine and the carbine pistol.
	The reorganization of the French cavalry.
	In the infantry.
	The change of foot at the gallop.
	Cavalry in warfare.
	Cavalry and the exotic school.
	Cavalry maneuvers.
	The jump of the horse.
	Training of the horse for the broad jump.
	Infantry mounted on camels.
	The rôle of cavalry as covering troops.
	Instructions for the school of the company.
	The young infantry officer and his tactical instruction.
	March of the foot soldier.
	Manual for the training of the infantry.
France-Africa	Mounted infantry in South Algeria and Sahara.
Germany	The use of cavalry.
	Practical instruction for the cavalry service in the field.
	Dismounted fighting of cavalry.
	Probable increase of the German Cavalry.
	Saber-pistol.
	Target practice in field combat.
	A new style of target.
	Innovations in the musketry instruction.
Russia	The Russian cavalry, organization, character, etc.
Italy	The Bersaglieri (Italian corps d'elite).
Spain	Concerning infantry tactics.
Switzerland	Cavalry and dragoons.

6. ARTILLERY.

Country.	Title.
Austria-Hungary	A discussion of the field gun.
	The question of new guns in Austria-Hungary.
	Harness of the Austria-Hungarian artillery.
Brazil	Experiments with rapid-fire guns of various makes.
China	German mountain artillery in China.
Belgium	Material of the 75 mm. rapid-fire field gun, system Nordenfeldt.
	Kind of projectile to be employed with rapid-fire field gun of small caliber.
	The employment of rapid-fire field artillery.
France	Rapid-fire field artillery.
	Firing methods of the new French field artillery from a tactical and technical point of view.
	Status of the question of the tactical employment of the rapid-fire field gun.
	Minimum distance between a battery and its mask.
	Note upon an automatic method of ranging for rapid-fire batteries.
	Tactical changes resulting from improvement in armament.
Germany	Our heavy field howitzers.
	On the theme of steel projectiles and protective shields.
	Development of fuses in the Prussian artillery.
	Construction of shrapnel for opposing shield batteries.
	Observations on the fire of heavy howitzer batteries.
	Tactics of field artillery for officers of all arms.
	Importance of heavy field guns to a field army.
	Observations of the fire of heavy howitzer batteries.
Italy	Instructions on the material and ammunition for field, horse, and mountain artillery.
	Harness and traction of carriages in the Italian artillery.
Switzerland	Rearming the Swiss field artillery.
	The new Swiss artillery material.
Russia	The Russian field gun, model 1900.
General	Notes and comments (concerning field guns).

LIST OF TRANSLATIONS, ETC.—Continued.

7. TECHNICAL TROOPS.

Country.	Title.
Argentina	Military pigeon house in Buenos Aires.
Austria-Hungary	The organization of engineer troops in Austria-Hungary.
Brazil	The Acre Territory.
France	The military landscapes, topographical drawing, "The Military Landscape." Method of laying out railroad crosscuts. Regulations governing the instruction of railroad troops.
Germany	The range-measuring system used in the army. The Ghenea sight for field guns and howitzers. Range-measuring instrument used in the army and the Paschwitz telemeter. Influence of the shield upon the development of field material and upon tactics. Military railroad organization. Some recent experiments with snow, fortifications, defenses, etc.
Spain	Remarks concerning dirigible balloons.
Italy	The use of the "camera obscura" in topographic drawing.

8. MINOR SERVICES.

Germany	Instructions for the management, training, and use of war dogs.
France	The management of military hospitals. Alcoholism. Military cycling.
Spain	Reinforced cement for military uses.

9. NAVY.

General	Naval chronicles.
Germany	Battle ship or cruiser.
Great Britain	Artillery of the new British cruisers.
France	The torpedo. Turrets or casemates? The recoaling of war ships.
Spain	Submarines.
Russia	The Russian school-ship *Ocean*.

LIST OF BOOKS, PAMPHLETS, ETC., RECEIVED DURING SIX MONTHS ENDING JUNE 30, 1904.

GENERAL.

600 Almanac de Gotha.
310 Collection of laws and customs of war.
310 Concerning copyright legislation and rights.
717 General works treating of cartography.
231 Indexed atlas of the world.
274 Report concerning second International Conference of American States.
000 Select list of references on Anglo-Saxon interests.
230 South and Central America.
000 Yearbook, Von Lobell's.

ARGENTINE.

531 Mounted infantry.

AUSTRIA-HUNGARY.

440 Book of instructions for one year's volunteers concerning horses.
240 Budget, 1904.
520.4 Cavalry horses and knowledge of them requisite for officers of foot troops.
520.1 Drill regulation for the cavalry.
403 Economic administration.
240 Estimates, etc.
240 Estimates, 1904.
030 Handbook of the officers of the general staff.
240 Hungarian budget, 1904.
101 Instruction in tactics for one year volunteers.
403 Intendance in the Austrian army.
500.1 Fifty minor problems from the drill regulations for the K. u. K. cavalry, with solutions.
210 Organizations of the army.
101.1 Practical studies in field service.
600.1 Provisional drill regulations for the artillery.
321 Recruiting regulations for the regular army.
403 Regulations for the intendance service.
616 Seacoast artillery.
216 Station of troops.
101 Tactical handbook for the troops commanders, Vienna, 1904.
600.2 Target practice and individual practice with practice cartridges.
520.1 Technical instruction for pioneer and squadron pioneers of the cavalry.

BELGIUM.

613	Experiments made in Belgium with field guns.
727	Premature explosions in rapid-fire guns.
220	Stations of artillery officers and regimental divisions.

BRAZIL.

200	Brazil of to-day.
240	Estimates from Brazil.

CHILE.

520	Cavalry drill regulations.
312	Collection of laws of the army.
520	Field service of cavalry.
600. 2	Firing regulations for artillery.
230	Geography and historic study of the position of Argentine and Chile.
103	Gymnastic regulations for mounted troops.
530. 7	Instruction in equitation for mounted troops.
120	Interior regulations for the military school.
000	List of books, articles, etc., relating to Chile.
120	Military school of Chile.
500. 2	Regulations for cavalry practice and firing.
103	Regulations for field gymnastics.
101. 1	Regulations for field service.
120	Regulations for the military school.
605	Regulations for mountain artillery.
200	Short description of the Republic of Chile.

CHINA.

200	China from land and balloon views, 272 photographs.
260	China expedition of 1900.
260	Chinese campaign 1900–1901.
260	Chinese relief expedition (Italian).
260	Chinese war.
260	Chinese war 1901.
260	Chinese war.
200	Description of Manchuria.
260	Events in China, Chinese relief expedition.
200	Russian China, notes on the occupation of Konantyang.
900	Sailors in China.
260	Siege of Peking, history of.
260	War of the civilization, a record of a foreign devil's experience with the allies in China.

COLOMBIA.

200	Relations with the United States of Colombia.

COSTA RICA.

200	Report of the minister of the army and navy.

CUBA.

200	Establishment of free government in Cuba.
233	Food supply.
233	Mineral resources.
233	Natural and commercial resources, consumption and importation of live stock.
233	Natural and commercial resources.
232	Population (statistics) 1902.
260	Spanish-American war.

FRANCE.

200	Algeria and the assimilation of the native Mussulmans.
613	Artillery patrol.
101.6	Artillery patrol.
240	Budget vote des depenses de l'exercice 1904.
240	Budget, 1904.
260	Campaign of 1815.
510	Cavalry armament.
240	Details of the estimates for 1904.
240	General accounts presented for 1902 (army).
230	Geographical service of the army.
101.1	Lectures on field service.
603.1	Maneuver regulations for field artillery.
260	Peoples' war lectures on Franco-German war.
603	Problems concerning the organization of field artillery.
101.6	Reconnaissance.
122.3	Regulations for admission to the superior war school.
101	Study of counter attack.
705	Training of cavalry pioneers.

GERMANY.

616	Again the field howitzer.
211	Army list of the Prussian army.
600.1	Artillery firing.
101	Attack in battle.
240	Budget for the colonies.
000	Catalogue of books published by Glaser & Co.
725	Description of Goertz range finder.
240	Expenses of the expedition to East Africa.
101	Explanations of the principles of strategy.
600.1	Extra sheets for artillery drill regulations.
230.1	Extra sheets for the infantry drill regulations.
302.1	German train troops on a peace footing.
600	Guide for ballistics, etc.
530	Guide for cavalry commander.
717	Guide for instruction in topography translated from the German for the use of the military schools of Chile.
733	Handbook for aeronauts.

705 Handbooks for pioneer officers and noncommissioned officers.
610 Handbook of arms.
712 Importance of fortifications in large war enterprises.
530 Infantry service in the field.
200 Land and sea, Boguslawski.
600 Lessons concerning the organization of artillery.
603. 1 Maneuver instruction for the field artillery.
200 Military evolution in Germany and France.
820 Military and voluntary care of the sick.
210 Outlines of the German land army.
240 Peace budget.
240 Peace expenditures of Prussian army, 1904.
923 Photographs of periscope for submarines adopted by Italy.
101 Pursuit.
725 Range measuring system used in the army.
260 Separate histories in war.
717 Sketching as an aid to reconnaissance.
101 Tactics.
520. 1 Tactical problems in tactics.
820 Tactical training of the officers of the medical service.
101 Task of the battalion in battle.
520. 1 Use and training of the cavalry.

GREAT BRITAIN.

300 Alterations in army administration.
212 Annual report of the inspector-general of recruits.
110 Army school regulations.
403 Army service corps with infantry brigades.
403 Army service corps company with infantry divisional troops.
403 Army service corps company with corps troops.
403 Army service corps with cavalry brigade.
600. 1 Artillery tactics and training.
260 Boer war.
260 Book of newspaper clippings on operations in South Africa.
500. 2 Care and construction of rifle ranges.
920. 1 Cavalry training.
420 Clothing regulations, militia.
200 Description of Canada.
610 Dismountable guns.
530. 1 Drill regulations for infantry, provisional.
110 Education of the army officer.
270 English means of communication across Canada and to harbors on the Pacific.
604 Equipment of horse artillery.
608 Equipment of howitzer artillery.
426 Equipment regulations.
240 Estimates.
630. 1 Evolution of modern infantry tactics.

613	Field artillery equipment.
613. 1	Field artillery drill regulations.
453	Field bakery.
403	Field company.
403	Field company or fortress company, etc.
260	French cavalry campaign, Natal, 1901.
200	General conditions in New Zealand, politics, history, etc.
200	General description of Canada.
213	General information concerning volunteers, yeomanry, etc.
400	General manual for the soldier.
610	Handbook for the 1-pounder Maxim Q. F. gun.
600. 1	Heavy artillery practice.
600. 1	Heavy artillery training.
403	Infantry division staff.
530. 1	Infantry training.
305	Inspection of Canadian troops.
120	Inspection of schools, military, 1900.
403	Intendance.
613	75-mm. Krupp barrel-recoil field gun adopted.
450	Management of the refreshment branches of regimental institutes.
820	Manual for the medical corps.
820	Medical and surgical experience in the South African war.
240	Memorandum of the secretary of state concerning expeditions.
830	Military societies, reports of various ones in Great Britain.
403	Mobilization store tables for the field army.
530. 1	Modern military tactics (résumé).
500. 2	Musketry instruction and target practice.
312. 1	Orders and regulation of the British army.
240	Ordnance expenditures.
342. 4	Pay of officers.
341. 2	Promotion of enlisted men.
343	Promotion of officers.
260	Records of the South African war.
216	Regimental establishments of the regular and auxilary forces.
403	Regimental staff of corps engineers.
600. 1	Regulations for the army ordnance service.
400	Regulations for the supply barrack and transport services.
520. 3	Regulations for yeomanry.
600	Regulations for the care and preservation of material.
120	Regulations for the admission to military colleges.
710	Regulations for the engineer service.
120	Regulations of English military schools.
850	Regulations for the veterinary service.
600. 2	Report on artillery target practice.
213	Report of militia and defense.
313	Rules of procedure.
613	Siege artillery drill regulations.
607	Siege artillery.
345	Superannuation act, civil employment of officers.

HONDURAS.

233	Commercial situation.

ITALY.

520. 7	Equitation and hippological sports.
103	Manual of Italian gymnastics.
802	Military cycling.
613	Mounting of field guns, model 1896. 75a.
103	Regulations for military gymnastics.
216	Stations of troops, February, 1904.
850	Veterinary service in Italy.

JAPAN.

200	Army and navy.
120	Calendar of the university.
200	Concerning the Russo-Japanese war.
823	Concerning the Red Cross Society in Japan.
230	Geographical sketch of the seat of war in Asia.
200	Handbook of modern Japan.
210	Japanese armed strength.
200	Land war in East Asia and the present prospects.
260	Manifest of Nicholas II announcing war with Japan.
200	Military strength.
603	Reorganization of the field artillery.
500. 2	Resupply of ammunition for infantry.
200	Russo-Japanese war.

KOREA.

200	Description of Korea.

MEXICO.

110	Catalogue of books used in military education.
613	Comparative study of the cannon of 75 mm.
230	Description of the country.
200	Face to face with the Mexicans, description.
200	General descriptive guide of Mexico.
260	History of the reign of Maximilian and the French intervention in Mexico.
312	Law of organization of the army.
230	List of geographical names.
300	Military government in Mexico.
200	Mexico and her capitals.
200	Picturesque Mexico.
230	Record of a journey through Mexico.
251	Regulations for the administration and intendance of the national arsenal floating dock.
210	Report of the secretary of war.
260	Yagui war.

MOROCCO.

200 General idea of the geography, government, etc.

NETHERLANDS.

802 Additions to the cyclist regulations.
312.1 Army orders and regulations, 1903.
530.1 Command, etc. of the infantry.
600.1 Drill regulations for horse and field artillery.
102 Field maneuver regulations.
600.1 Instructions for practice seaward, garrison artlliery.
520.1 Principles of instruction for the cavalry.
604.1 Provisional regulations for the training of the horse artillery.
276 Regulations and additions governing the ferries, etc.
510 Regulations concerning small arms.
453 Regulations concerning field ovens.
403 Regulations for the interior service of the infantry.
420 Regulations for uniforms and equipment.
520.1 School of the platoon, foot, cavalry.
520.1 School of the squadron, cavalry.
500.2 Target practice regulations for the infantry.
240 Statement of military savings bank.

NICARAGUA.

233 Commercial situation.

RUSSIA.

200 Army and the fleet of Russia.
210 Army list for April, 1904.
200 Army and navy.
211 Army register to April, 1, 1904.
200 General description of Russia in Siberia and the East.
102 Maneuvers for 1903.
500.2 Regulations of the central firing school.
279 Russian war harbors in East Asia.
920 War ships in the East.

SPAIN.

211 Army list for 1904.
500.2 Regulations of the central firing school of the army.
260 United States against Spain.

SWITZERLAND.

101.1 Field service instructions.
101.1 Instruction in field service.
717 Law concerning the topographical bureau of the confederation.
520.1 Thoughts about the leading of a combined cavalry detachment under Swiss conditions.

UNITED STATES.

200	Annual report of the War Department, 1903. Vol. XIX, report of the chief of ordnance.
210	Annual report of the Secretary of War, 1899–1903.
102	Army maneuvers, Portland, Me.
312. 1	Army regulations.
458	Chemical analysis of water.
920	Development of the submarine in the direction of increased scope.
230	Dictionary of the plant names of the Philippines.
520. 1	Documentary history of the development of Washington.
232	Estimates of population of the larger cities.
500. 2	Firing instructions, small arms.
500. 2	Firing regulations for the regular army and organized militia.
260	Filipino commissioners at St. Louis.
274	Facts about the bonded indebtedness of railroads.
613	76. 2 mm. field gun, description.
102	Fort Riley maneuvers, 1903.
230	Geography of the United States and possessions.
200	Greater America, prospects of the United States.
230	Gutta-percha and rubber in the Philippines.
500. 2	How to promote rifle practice among our countrymen.
231	Indexed atlas of the United States.
000	Indexes of publications.
530	Infantry drill regulations.
106	Instructions for salutes and ceremonies.
000	List of maps of America.
520. 1	Manual for noncommissioned officers of a troop of cavalry.
231	Maps of the United States.
500. 2	Military rifle shooting.
233	Mineral resources.
326	National home for disabled volunteer soldiers.
900	Navy of the United States.
902	Navy maneuvers.
230	Northern and northwestern lakes.
600. 2	Ordnance and artillery target practice.
900	Philippines shipping register, list of vessels, 1903.
200	Philippines.
716	Photography, treatise on the lens.
233	Production of precious metals.
342. 4	Regulations for officers' pay.
322. 4	Regulations for pay of enlisted men.
200	Relations of the United States with Colombia.
920	Remarks on submarine torpedo boats.
312	Revised Statutes of the United States.
811	Rules and regulations of the national rifle association and targets and scoring cards.
106	Salute and ceremonies.
820	Serum laboratory, bureau of government laboratories.
110	Soldier's handbook.

102 **Survey** of the maneuver grounds at West Point, Ky.
213 **Training** of the militia.
820 **Trypanosoma** and trypanosomiasis, with special reference to surra in the Philippine Islands.
000 **Union** list of periodicals, transactions, and allied publications currently received in the principal libraries of the District of Columbia.

URUGUAY.

200 **Public** debt of Uruguay.

VENEZUELA.

230 **Guide** and directory of Caracas.
230 **Journey** through Venezuelan Guyana.
274 **Railways**.

LIST OF SUBJECTS CARDED DURING SIX MONTHS ENDING JUNE 30, 1904.

GENERAL.

900	Active fleets of various countries.
733	Aerial navigation.
000	Almanach de Gotha.
101	Attack formations after the experience of the South African war.
402.7	Automobiles in military service of various countries.
724	Ballistic apparatus for determining velocity of projectiles.
733	Ballooning, progress and significance for war.
613	Barrel-recoil field gun.
922	Battle ships, mines, and torpedoes.
513	Bayonets, and their tactical employment in the light of history.
520.1	Cavalry on the battlefield.
310	Collection of laws and customs of war.
603.2	Comparisons of the target-practice experiences of the German, French, and Russian field artillery.
900	Comparative statistics of the world's fleets.
900	Comparative strength of the fleets of various countries.
310	Concerning copyright legislation and rights.
233	Conditions of the Salar del Carmen nitrate syndicate, statement of the accounts, etc.
260	Cost of wars in the nineteenth century.
274	Crossing the Andes.
802	Cycling in national defense.
720	Determination of velocity by means of unperiodical condensator discharges.
850	Diseases affecting artillery horses; glanders.
920	Early armor clads, history of.
110	Educational value of universal service.
520.2	Effect of warlike fire of infantry detachment.
200	Empire of the Mediterranean.
924	Employment of submarine boats in war.
603.2	Employing R.-F. guns singly.
500.2	Evolution of fire tactics of infantry.
500.2	Falling targets.
530.1	Fire and bayonet tactics.
900	Foreign (not German) navies in 1903.
101.1	Fortress warfare.
705	Fortress warfare and pioneer troops.
402.7	Future of motors in war.
717	General works treating of cartography.
231	Indexed atlas of the world.

600.2	Influence of the adoption of the new guns on field artillery.
600.2	Illustration from Spanish-American war; the superiority of rapid-fire guns of small caliber over other guns.
719	Land mines.
618	Light howitzers and their curved discharges of shrapnell.
220	List of books on coast fortifications in the various countries.
811	Machine guns, their tactical use, and their value.
810	Machine guns and machine-gun troops.
402	Mechanical and commercial aspects of alcohol motors.
726	Methods of testing explosives.
402.7	Military automobilism in various countries.
200	Military situation in the Far East.
731	Military wireless telegraphy.
200	Miscellaneous foreign military notes.
530	Modern infantry.
921	Modern naval torpedoes.
922	Modern torpedo boats.
402.7	Motor wagons for freight.
500.2	National rifle matches.
726	New apparatus for the study of the gradual decomposition of nitroglycerine explosive gelatin with acetylene; new test of stability of smokeless powders.
920	New war ships of the principal sea powers.
900	Organization of fleets of various countries in 1904.
606	Organization of seacoast batteries.
274	Pan-American railway.
200	Peace convention at The Hague.
603.2	Preparation to field-battery fire.
613	Present state of the field-gun problem in various countries.
920	Prize essay on development of war ships.
607.2	Problem of indirect fire in siege artillery.
600.1	Promiscuosity in the service of artillery.
210.4	Railroad construction, Arctic railroad building.
342.1	Ranks of army officers.
603.2	Rapid-fire guns used as range-finders and altimeters.
000	Reference books.
600.2	Reflections on the estimation of distances.
900	Relative strength of the naval powers.
274	Report concerning the Second International Conference of American States.
311.1	Right of eminent domain as illustrated by Panama incident.
000	Select list of references in Anglo-Saxon interests.
402.9	Skees in military use.
603.2	Some results of field firing.
610	Sources of error in the sighting with the various new guns.
200	South America and our responsibilities.
230	South Central America.
900	Steam trials on war ships.

274	Steamboats and steamboat lines on the Parana, Paraguay, and Alto Parana.
924	Submarine boats of the principal powers.
811	Tactical employment of machine guns in the field.
231	Terrain of Russo-Jap war.
726	Tests for the stability of powders and explosives with a nitrocellulose base.
604. 1	Training of cavalry with horse artillery in the time of peace.
274	Transandine railroad contract.
808	Use of dogs in war, history.
600. 1	Use of heavy guns in the field in Europe.
811	Use of the machine guns.
810	Use of machine guns on a strongly covered plain.
718	Use of searchlights for military targets.
800	World's naval strength.
000	Yearbook, Von Lobell's.

ARGENTINA.

274	Anglo-Argentine tramways company.
200	Argentine Republic.
240	Budget for 1904 for the army.
600. 1	Concerning the use of shields as a protection against artillery fire.
233	Exports of Argentina to Brazil.
200	General description of conditions in Argentina.
230	Geographic and historic study of the position of Argentina and Chile.
200	General information.
233	Gold dredging in Fuego.
233	Grain growing.
230	Journey to the north of Argentina Republic.
231	Map of the province of Buenos Ayres.
200	Message of the Argentina President. 1904.
260	Military history of Argentina.
210	Mixed brigades, Argentina.
531	Mounted infantry in Argentina.
274	Railways.
811	Record of a target practice society.
530	Recruiting and training mounted troops.
200	Respect of the Argentine Republic to Italy and to the House of Savoy.
210	Review of military affairs for 1903.

AUSTRIA-HUNGARY.

212	Annual contingent of the Hungarian recruits.
600. 2	Artillery firing experiments.
600. 4	Artillery horse equipment.
600. 2	Artillery target practice experiments in Austria-Hungary.
210	Army (2 articles).
440	Book of instruction for one year's volunteers concerning horses.

702	Bridge train.
240	Budget., 1904 (2 articles).
240	Budgets voted for 1905.
426	Captain Bézard's compass.
520.4	Cavalry horses and knowledge of them requisite for officers of foot troops.
613	Concerning the new Austrian field artillery
312.4	Corporal punishment in the army.
920	Description of battle ship *Friederich.*
013	Discussion of the field gun.
520.1	Drill regulations for the cavalry.
403	Economic administration.
240	Estimates, 1904 (2 articles).
613	Field gun question.
500.2	Firing school of the army at Bruk sur Leitha.
030	Handbook of officers of the general staff.
600.4	Harness for artillery horses.
240	Hungarian budget, 1904.
101	Instruction in tactics for one year volunteers.
403	Intendance in the Austrian army.
403	Intendance service.
811	Machine guns with field armies.
811	Machine guns with tables, sketches.
804	Macedonian gendarmie.
216	Map showing stations of troops.
822	Medical statistics of the army.
240	Military budget.
50	Minor problems for the drill regulations for the K. u. K. cavalry with solutions.
240	Naval expenditures.
102	New maneuver regulations.
500.2	New plan for firing instruction.
320	Noncommissioned officers; recruiting, training, and conditions of service.
210	Organization of the army.
210	Organization of the army, 1904 (2 articles).
453	Portable field ovens.
101.1	Practical studies in field service.
500.2	Project for target practice for infantry and rifles.
600.1	Provisional drill regulations for the artillery.
210	Reforms in prospect in army.
403	Regulations for intendance service.
212	Recruit contingent for 1904.
212.	Recruit statistics.
321.2	Reenlistment of noncommissioned officers.
616	Seacoast artillery.
610	Solution of the armament of artillery
613	Solution of the field-gun problem.
216	Station of troops.

210	Strength of armies of the double and triple alliances.
413	Subsistence officials; project of a law.
600. 2	Target practice and individual practice with practice cartridges.
520. 1	Technical instruction for pioneer and squadron pioneers of the cavalry.
700	Technical instruction for the one year volunteers.
811	Tests of machine guns.
610	Tests of bursting charges at Skoda works.
719	Torpedoes ordered by Austria-Hungary.
101. 6	Training of a soldier for a scout.
101	Tactical handbook for troop commanders, Vienna, 1904.
704	Railroad troops.
613	Rapid-fire gun in Austria.
402. 7	Use of automobiles in maneuvers.
900	War ships.
920	War-ship construction.

BELGIUM.

610	Ammunition supply in the field.
600. 1	Cadre drills.
302	Commands of forts and stations, duties, etc.
613	Experiments made in Belgium with field guns.
500. 2	Firing practice with reduced charges.
120	Modifications of examination programmes for admission to military colleges.
613	New field guns in Belgium.
302	New organization of general staff on a war footing and on a peace footing.
420	New uniform for the cavalry.
610	Opinions concerning the employment of rapid-fire artillery.
210	Organization of field army.
727	Premature explosions in rapid-fire guns.
603. 2	Recent field artillery target practice in the Belgium army (2 articles).
421	Regulations concerning bedding and tent equipage.
210	Reorganization of the army.
603	Reorganization of our field artillery (2 articles).
220	Stations of artillery officers and regimental divisions.

BRAZIL.

200	Acre territory and caoutchouc region of South America.
233	Agriculture in Brazil.
600. 2	Artillery covered fire.
274	Bahia Blanca and the Buenos Ayres and Pacific railways.
200	Boundary question between Brazil and Bolivia.
200	Brazil and Peru.
233	Brazil mining developments.
731	Brazilian telegraphy.
200	Brazil of to-day.
311. 2	Brazil treaty with Bolivia.

240	Budgets, accounts, etc., table showing the amount the President of Brazil is authorized to expend for war.
220	Coast and description of port at Rosario.
620. 1	Combat of cavalry against cavalry.
240	Estimates from Brazil.
613	Experiments with artillery of the latest model.
610	Experiments with rapid-fire guns of various makes.
233	Foreign trade of Brazil.
200	General information concerning Brazil.
233	General statistics.
200	German influence in southern Brazil.
200	Ideas on territorial pretensions.
613	Krupp barrel-recoil tested as to endurance.
613	Tests of Krupp field guns.
240	National debt of Brazil.
900	Organization and distribution of the navy.
510	Prohibition of arms destined for Peru from transmission across Brazilian territory.
233	Santos weekly cable of shipments.
200	The United States of Brazil.

BULGARIA.

210	Budgetary strength.
240	Bulgarian military budget for 1904.
240	Bulgarian budget.
240	Military budget.
514	Parabellum magazine pistol adopted for officers.
342. 4	Pay and allowances of officers and officials in time of war.
274	Railroads of European Turkey and of Bulgaria as war equipment.
210	Reorganization of the Bulgarian army.
210	Reorganization of the army (three articles).

CHILE.

210	Army.
210	Army strength and organization.
520	Cavalry drill regulations.
920	Chilean battle ship.
200	Chilean prosperity.
312	Collection of laws of the army.
120	Concerning the military school of Chile.
520	Field service of cavalry.
600. 2	Firing regulations for artillery.
103	Gymnastic regulations for mounted troops.
233	Industrial future of Chile in connection with the Panama Canal.
520. 7	Instruction in equitation for mounted troops.
120	Interior regulations for the Military school.
120	Interior service in military schools.
000	List of books, articles, etc., relating to Chile.
200	Message of the Chilean president, 1904.

274	Prospect of completion of the transandine railroad.
500. 2	Regulations for cavalry target practice and firing.
605	Regulations for mountain artillery.
103	Regulations for gymnastics.
200	Short description of Chile.

CHINA.

210	Army organization.
210	Army (two articles).
260	British expedition in Thibet in 1904.
270	Brochure of the Messageries maritimes, guide for Shanghai passengers.
274	Canton-Hankou Railroad.
251	Cartridge and powder factory.
200	China from land and balloon views (272 photographs).
260	China expedition of 1900.
210	China's army (two articles).
900	China's navy.
260	Chinese campaign, 1900–1901.
920	Chinese fleet.
260	Chinese relief expedition (Italian).
260	Chinese war, 1901.
920	Chinese warships.
260	Concerning events in China, Chinese relief expedition.
200	Conditions in Manchuria (two articles).
200	Danger to be anticipated from the Chinese in Indo-China.
200	Description of Manchuria (two articles).
200	Incloses Chinese imperial edict ordering increase in strength of the army.
200	Far eastern problem.
233	Food supply.
200	General information concerning Manchuria.
605. 1	German mountain gun in China.
300	Imperial edict establishing central military bureau.
274	Indo-Chinese railways.
230	Journey from Peking to Tsitsihar.
200	Manchurian question.
231	Map of Korea and of the coast of Manchuria.
230	Military geography outline of the territory involved in the Russo-Jap war.
200	Neutrality and administration entity of China.
233	New Japanse treaty of commerce with China.
200	Notes on Chinese forces in Chih-li.
230	Notes on Manchuria.
122	Officers' school at Washang.
231	Port Arthur.
274	Railways in China.
210	Reorganization of the banner troops and of the troops of the green flag.

200	Report of a month's journey.
200	Russian China, notes on the occupation of Konantyang.
220	Russians evacuating Shanghai-Hwang.
200	Russo-Japanese war.
260	Siege of Peking.
210	Statement showing strength and distribution of foreign troops in North China.
200	United States and the integrity of the Chinese Empire.
260	War of the civilizations, a record of a foreign devil's experience with the allies in China.
260	War of 1900–1901.
200	A year's cruise in the eastern seas.

COLOMBIA.

200	Colombia, the government, country, and people.
233	Cotton growing in Colombia.
233	Cotton growing.
200	General situation.
200	Government, country, and people.
807	New postage for Colombia.
200	News from the sacred lake of Guatavita.
274	Notes on the railroads of Colombia.
274	Notes on the railways in the United States of Colombia.
321	Recruiting regulations for the regular army.
200	Relations of the United States with Colombia.
200	Troops leaving for the coast, January 30, 1904.
274	Ways and means of communication in Colombia.

COSTA RICA.

274	Costa Rica railway.
200	Report of the minister of army and navy.

CUBA.

240	Budget and expenditures for military matters.
240	Budget of the Republic of Cuba, 1900.
260	Capture of Habana by British in 1761.
200	Concerning the disorder at Cienfuegos.
600	Cuban artillery corps, law for the organization thereof.
260	Dispatch forwarding book and translation of the Spanish-American war.
110	Education and schools; report concerning educational matters in Cuba.
110	Education and schools.
200	Establishment of free government in Cuba.
200	First general elections of the Republic of Cuba.
233	Foreign commerce.
260	General information concerning Spanish-American war.
233	Mineral resources.

233	Natural and commercial resources.
233	Natural and commercial resources; consumption and importation of live stock.
233	Natural and commercial resources.
210	Necessity and methods for increasing the efficiency of the Cuban army.
232	Population (statistics), 1900–1901.
232	Population (statistics), Cuba, 1902.
274	Proposed electric railway in Cuba.
260	Spanish-American war.
240	Statistics of landed estates, urban and rural.

DENMARK.

240	Budgets for the army and navy.
100	Education and drill.
613	Field guns and wagons ordered at Krupps.
811	Machine guns in Denmark.
820	Medical service in the Danish army.
902	Naval budget.
613	New armament of artillery.

ECUADOR.

122	Schools of application for officers.

FRANCE.

530. 1	Advance of troops under fire.
733	Aerostatics, flying machines, progress made in their construction.
513	Aiming device for rifles.
200	Algeria and the assimilation of the native Musselmans.
330	Alteration in the method of recruiting.
613	Ammunition supply per gun.
200	Anglo-French agreement.
725	Apparatus for sighting guns with independent line of sight.
830	Appointment of physicians of the reserve and army.
600	Artillery organization.
101. 6	Artillery patrol.
122. 6	Artillery schools for officers, schools of application.
210	Army organization and reforms, numerical strength.
102	Army maneuvers, 1904.
210	Army, general criticism.
101	Attack and defense formations for seacoast defense.
600. 2	Automatic method of ranging for rapid-fire batteries.
260	Battle of Malplaquet, 1709.
240	Budget, 1904.
240	Budget vote des depenses de l'exercice 1904.
260	Campaign of 1815.
510	Cavalry armament.
530. 1	Cavalry and the cannon.

520 Cavalry, its coming reforms.
811 Cavalry machine guns.
710.4 Construction and operation of a standard-gauge railroad to the camp of Chalons in 1902.
446 Construction of mangers for horses to prevent contagion in case of disease.
122.7 Creation of a school of application for artillery and engineering.
520 Creation of two regiments of cavalry.
802 Cyclists, infantry (2 articles).
210 Decree for the creation of native auxiliaries for the Senegal troops.
603 Decree concerning the reorganization of artillery of Valence.
220 Defense of the colonies.
220 Defenses of Indo-China.
240 Details of the estimates for 1904.
312.2 Disciplinary punishments.
101 Employment of reserves in the field of battle.
500.2 Errors in aiming.
711 Experiments in field fortifications.
101 Evolution of tactics.
603 Field artillery, organization, armament.
500.2 Fighting against balloons.
702 Firemen, criticism of French equipment for life saving in cases of fires.
613 Firing against batteries protected with shields.
500.2 Firing instruction in France.
600.2 Firing instruction in artillery.
200 France and Roumania, relations between the countries.
924 French submarine boats.
311.2 French-English treaty.
613 French 75-mm. R. F. field artillery.
220 Frontier fortresses and garrisons.
240 General accounts presented for 1902 (army).
102 General instructions for maneuvers.
230 Geographical service of the army.
520.1 German idea of infantry tactics in the French army.
617 155-mm. gun (siege and heavy guns with the army in the field).
717 120-mm. gun (siege and heavy guns with the army in the field).
615 68-mm. gun (Ducrier), France.
260 History of Annam and Tonkin.
600.4 Horse training in the artillery.
440 Horses and horse equipment.
811 Hotchkiss machine guns.
802 Increase of cycle companies.
274 Indo-Chinese railroads.
420 Infantry equipment.
500.2 Infantry target practice.
500.2 Infantry tactics and target practice.
101 Influences of the terrain in military operations.
200 Information concerning the French colonies.

102.4	Instruction camps.
302	Instructions relative to education for general staff service.
520	Infantry in France.
312.4	Law concerning amnesties.
101.1	Lectures on field service.
102	Maneuvers, 1904.
102	Maneuvers of 1903.
603.1	Maneuver regulations for field artillery.
102	Maneuvers to take place in 1904.
820	Maneuvers of medical service.
520.1	Marching, criticism of the book "Comment on Marche."
102.2	March of the army, experiment made in France.
850	Measures to be taken to diminish disease in horses in the army.
850	Medical service, tuberculosis in the army.
200	Mediterranean domain, the Morocco question, etc.
210	Messimy's project of army organization.
240	Military budget, 1904.
200	Military and political history of Annam and Tonkin.
704	Military railroad transportation; organization and training of railroad troops.
120	Military schools.
402.4	Military railroad transportation.
120	Military schools.
102	Military review for President Loubet.
102	Mobilization exercises described.
101	Modern combat, laws laid down for combat between two forces equally armed.
605	Mountain artillery.
902	Naval budget for 1904.
902	Naval expenditures for 1905.
320	Noncommissioned officer, recruiting, training, and conditions of service.
603.1	New drill regulations for field artillery.
513	New guns.
513	New rifle.
101	Night tactical operations.
101	Night operations.
212	Number of recruits for 1902-3.
900	Organization of the navy, torpedo boats, etc.
230	Organization equipment, etc., of the French infantry.
520	Organization of the cavalry.
520	Origin of the French cavalry.
260	Peoples war lecture on Franco-German war.
102	Photographic views relating to maneuvers.
203	Plans for attack and defense.
101	Present ideas of tactics in France, from the quarterly pamphlet of the German staff.
322	Present status of the two-year service project.
312.4	Punishment for spying.

520.7 Race of endurance from Libounne.
520.7 Races in the French Sudan.
342.1 Rank of army officers.
909 Rank of naval officers.
613 Rapid fire field artillery.
920 Recoaling of war ships.
600.1 Regimental artillery, in the war of 1870–71.
122.3 Regulations for admission to the superior school of France.
400 Regulations concerning transportation.
200 Relations of England and France.
442 Remounts and horse breeding.
440 Remounts for infantry captains and surgeons.
440 Remounts.
101.6 Reconnaissance.
603 Reorganization of field artillery.
21 Reorganization of colonial troops.
513 Repeating rifle.
513 Rifles.
520.5 Rouen Deauville ride.
821 Service in hospitals transferred from the religious orders to the laity, 1904.
402.9 Skees, etc.
402.9 Skis and raquettes.
211 Special lists of promotions in colonial troops.
520 Squadron of native cavalry.
210 Strength of armies of the double and triple alliances.
600.1 Studies (historical) concerning artillery.
101 Study of counter attack.
924 Submarine boats.
122.3 Superior war school.
500 Table giving comparative data of rifles of the principal powers.
603.1 Tactical employment and training of field artillery.
101 Tactical ideas in their present form.
600.1 Tactical doctrines, preparation of artillery for battle.
603.1 Tactical practice of reserves and territorial army (2 articles).
520.5 Tests of cavalry bridge material.
213 Three years' service of volunteers.
719 Torpedoes ordered from the Whitehead torpedo factory.
520.7 Trials for championship in horsemanship.
402.7 Trials for engines and trains for common roads.
705 Training of cavalry pioneers.
402 Transportation of horses.
322 The two years' service.
422 Uniforms.
900 Vessels building in France.
103 Walking match held among the members of the Vaillant barracks, described (1904).
240 War budget.
101.8 War game at Chalons, 1904.

122. 3	War school examinations.
260	War of 1870–71, August 16, in Lorraine.
260	War 1870, in Lorraine.
260	War of 1870–71, battle of Rezonville.
530	Weight of knapsack.
101	Winter campaigns.

GERMANY.

220	Abandonment of fortresses.
900	Actual effective personnel of the German navy.
616	Again the field howitzer.
513	Alterations in rifles.
233	American meat a German necessity.
924	Apparatus for raising and sinking submarine craft.
233	Artificial cooling of buildings.
210	Army in 1903.
211	Army list of the Prussian army.
210	Army rate of increase in the time of peace.
705	Article discussing the necessity of increasing the pioneer troops.
600. 1	Artillery firing.
616	Artillery exhibition at the Dusseldorf exposition.
101	Attack in battle.
733	Balloon service in the German army.
707	Balloon troops.
733	Ballooning in the field.
920	Battle ship or cruiser.
122. 3	Berlin war school, description, curriculum, etc.
101	Breaking off of the combat according to German ideas.
702	Bridge troops, organization and regulations.
618	Bronze and steel mortars, 210 mm.
240	Budget for the colonies.
240	Budget for the military courts.
240	Budget, Germany.
734	Carrier pigeons in the German army.
734	Carrier pigens on the coast.
000	Catalogue of books published by Glaser & Co.
251	Central station of German factories of powders, explosives, arms, and ammunition for scientific technical researches.
210	Changes in army organization, station, etc.
700	Communication; troops.
322	Conditions of the service; favortism in the army.
213	Convocation of the reserves in 1904.
102	Corps maneuvers, 1903.
210	Criticism of the army.
725	Description of the Goertz range-finder.
900	Development of the German marine and German sentiment concerning the same.
297	Dockyards.
707	Drill regulations for balloon troops.

500.2	Electric marking of hits in target practice.
500.2	Electrical disappearing targets.
240	Expenses of the expedition to East Africa.
900	Experiments in coaling and furnishing supplies to the navy.
610	Experiments with barrel-recoil guns.
726	Experiments with explosives.
101	Explanations of the principles of strategy.
230.1	Extra sheets for infantry-drill regulations.
520.1	Extra sheets for drill regulations, cavalry.
600.1	Extra sheets for artillery-drill regulations.
101	Evolution of modern strategy.
450	Feeding troops in time of war.
613	Field guns adapted to the times.
603.1	Field artillery tactics.
610	Fluid brake for recoil gun.
610	Fluid brake for guns.
220	Fortifications at Basel.
220	Fortifications near Basel.
260	Frederick the Great's campaign from Mollwitz to Leuthe
733	German aerostaticians.
210	German army.
240	German budget for 1904.
200	German danger.
200	German Empire, its attitude in the Far East.
101	German ideas of tactics.
605	German mountain artillery in China (2 articles).
900	German navy compared with the navies of other powers.
200	German retrospect.
200	Germans in Southwest Africa.
302.1	German train troops.
302.1	German train troops on a peace footing.
530	Guide for cavalry commander.
600	Guide for ballistics.
717	Guide for instruction in topography translated for the use of the military schools in Chile.
610	Guns transformed.
733	Handbook for aeronauts.
610	Handbook of arms.
705	Handbook for pioneer officers and noncommissioned officers.
260	Herero insurrection (South Africa).
440	Horse equipment, tropical cap for horses.
618	Howitzers, 150 mm.
101	Ideas of tactics.
110	Illiteracy among recruits.
101	Importance of covered movements.
712	Importance of fortifications in large war enterprises.
603.1	Importance of heavy field guns to a field army,
520	Increase and organization.
233	Industrial advance of Germany.

530	Infantry service in the field.
800	Interesting experiments made at Dresden in the extinguishing of fires.
210	Jena or Sedan?
618	Krupp field gun L-12, barrel recoil.
200	Land and sea—Boguslaski.
600	Lessons concerning the organization of artillery.
610	Long and short recoil for recuperator brakes.
603.1	Maneuver instruction for the field artillery.
102	Maneuvers.
102	Maneuvers of 1903.
122.7	Military technical academy (for officers) recently created.
122.7	Military technical academy at Berlin.
200	Military projects for 1904.
820	Military and voluntary care of the sick.
200	Military evolution in Germany and France.
600.1	Mounted exercises of the field artillery (2 articles).
900	Navy in 1903.
900	Navy news
700.1	New bridge material, folding saws.
725	New range finder for field artillery.
342.4	New pension law.
430	New regulations concerning uniforms.
500.2	New targets.
101	New tendencies of the German army, real and apparent.
320	Noncommissioned officers; recruiting, training, and conditions of service.
608.2	Observations on the fire of heavy howitzer batteries.
342.4	Officers' pay.
120	Opening of new military academy.
726	Ordnance powder cloth.
121.7	Organization of a military technical academy.
701	Organization of engineers.
210	Outlines of the German land army.
610	Percussion fuse for shell.
240	Peace budget.
240	Peace expenditures of Prussian army.
923	Photographs of periscope for submarines adopted by Italy.
707	Pictures as an aid in reconnaissance and general topographical work.
200	Progress in the army during the year of 1903.
850	Precautions against contagious diseases.
610	Projectile; inventor, Weisser.
101	Pursuit.
500.2	Questions concerning infantry fire.
725	Range-measuring system used in the army.
342.1	Rank of army officers.
613	Rapid-fire guns in Holland and Germany.
610	Recoil carriage for ordnance.
212	Recruit statistics for 1902.

212	Recruiting strength of the army, 1902.
216	Redistribution of the landwehr.
012	Review of books written as a reply to "Jena or Sedan."
306. 2	Rules regulating German officers on furlough in France seeking military information.
430	Safety chain.
513	Safety devices in firing with blank cartridges and bullets.
726	Scientific examination and tests of powders in Germany.
260	Separate histories of war.
900	Ships launched in 1903.
613	Shrapnel v. Shell for field artillery, discussion of Reichenau's ideas.
607	Siege artillery with the field army.
617	Siege gun, 100 mm.
617	Siege guns, 120 mm.; heavy guns with field army.
717	Sketching as an aid to reconnaissance.
340	Question of officers in Germany.
210	Strength of armies of the double and the triple alliances.
520	Strength of the cavalry divisions.
112	Study of languages in the Berlin war school.
924	Submarines, history development, use, etc. (2 articles).
233	Supply of coal in Germany.
101	Tactics.
520. 1	Tactical problems in tactics, etc.
101	Tactical ideas.
101	Tactical ideas (influence of the South African war).
820	Tactical training of the officers of the medical service.
500. 2	Target practice in field combat.
101	Task of the battalion.
520. 1	Technique of active service in cavalry, sketches, maps, etc.
705	Technical employment of pioneers.
731	Telegraphy by means of electrical searchlights.
732	Telephony by means of electrical searchlights.
613	Tests of field guns in Brazil.
101	Troop commanding and the science of war.
618	Two articles on the problem of field howitzer in Germany.
530. 1	Use of cavalry.
520. 1	Use and training of the cavalry.
900	Vessels building in Germany.
121. 8	Veterinary schools.
440	Vices of horses corrected by means of electricity.
402. 2	Wheels with springs for wagons.

GREAT BRITAIN.

300	Administration, war office reform.
200	Advance into Thibet.
260	Afghan wars.
200	Alaska.
300	Alterations in army administration.
610	Armament of the volunteers.

300	Army council (concerning administration).
240	Army estimates.
240	Army estimates, 1904–5.
200	Army in India, average strength maintained.
300	Army reform administration.
110	Army school regulations.
300	Army reorganization.
403	Army service corps company with infantry divisional troops.
403	Army service corps with infantry brigades.
403	Army service corps company with corps troops.
403	Army service corps with cavalry brigade.
212	Annual report of the inspector-general on recruits.
342. 4	Annuities, sums set aside.
600. 1	Artillery tactics and training.
101	Attack formations after the experience of the South African war.
440	Australian remounts from an Australian point of view.
260	Boer war.
260	Book of newspaper clippings on operations in South Africa.
613	Third Brigade Canadian Field Artillery; photos of commanding officers.
260	British expedition in Thibet.
240	Budget for 1904–5.
601	Camel battery.
260	Campaign in Somaliland.
233	Canada's commercial and industrial expansion.
274	Canadian canals and railroads.
200	Canadian defense.
276	Canadian canals.
233	Canadian linseed.
618	Capabilities and future rôle of field howitzers.
500. 2	Care and construction of rifle ranges.
520	Cavalry.
520. 1	Cavalry training.
520. 1	Cavalry drill regulations.
420	Clothing regulations, militia.
270	Communications with Manchuria.
900	Comparison of navy with that of other nations.
110	Compulsory military education.
300	Constitution of the army council.
402	Communication between artillery units in action.
200	Crisis at Ottawa concerning military organization.
802	Cycling in national defense.
500. 2	Decisive range, concerning target practice.
200	Description of Canada.
274	Defense aspect of the new transcontinental.
220	Defense of our naval fortresses.
220	Defense in Indo-China.
610	Dismountable guns.
711. 1	Disposal of refuse in camps.

530.1	Drill regulations for infantry, provisional.
200	Effect of the Alaska boundary decision.
200	Efficiency of land forces in Great Britain.
270	English means of communication across Canada and thence to harbors on the Pacific.
341.1	Employment of officers as railway staff officers and training for this employment.
604	Equipment of horse artillery.
608	Equipment of howitzer artillery.
426	Equipment regulations.
240	Estimates.
530.1	Evolution of modern infantry tactics.
342.5	Expenditures of officers.
200	Exploration of the South Borderland of Abyssinia.
603.1	Field artillery drill regulations.
213	Field artillery militia.
613	Field artillery equipment.
603	Field artillery rearmament.
453	Field bakery.
403	Field company.
403	Field company or fortress company.
613	Field gun of 1904.
900.2	Firing at the Belleisle (fire tests).
500.2	Firing as practiced in India.
220	Fortifications at the mouth of the Clyde.
260	French's cavalry campaign, Natal, 1901.
213	French and English militia in Canada.
200	French and English understanding.
200	Future of Canada and reciprocity with the United States.
200	General condition in New Zealand, politics and history.
200	General description (West Indies).
200	General description (Canada).
200	General information.
213	General information concerning volunteers, yeomanry, etc.
400	General manual for the soldier, receipts, etc.
260	German official history of the war in South Africa.
102	Grand maneuvers.
341	Granting of commissions in the army.
617	Gun, 100 mm.
103	Gymnastic training of the troops in the British army.
610	Handbook for the 1-pounder Maxim Q. F. gun.
610	Heavy artillery.
600.1	Heavy artillery practice.
600.1	Heavy artillery training.
920	H. M. S. Swiftsure, purchased from Chile.
600.1	Horse, field, and mountain artillery.
608.1	How to obtain the best fire effect from a field howitzer battery.
200	India as a military power.
210	Indian army.

274	Indo-Chinese railways.
403	Infantry division staff.
530. 1	Infantry training.
530. 3	Infantry reserves, volunteer infantry.
305	Inspection of the Canadian troops (militia).
120	Inspection of schools, military, 1900.
213	Instruction for the training of the militia and reserve.
600. 1	Instructions for practice seaward, garrison artillery.
122. 3	Intelligence and staff training schools.
403	Intendance.
203	Land defense of the coast defense.
514	Lee-Enfield rifle, experiences in South African war, etc.
300	Lord Escher's committee.
450	Management of the refreshment branches of regimental institutes.
900. 1	Maneuvers 1903.
820	Manual for the medical corps.
514	Manufacture of the new service rifle.
231	Map showing the Alaskan boundary decision.
231	Map of British boundaries in Burma.
900	Marine construction of Great Britain.
940	Marine budget for 1904–5.
907	Marine engines in warfare.
820	Medical and surgical experiences in the South African war.
402. 7	Mechanical transport.
240	Memorandum of the secretary of state concerning the expenditures.
200	Military forces of Australia.
000	Military glossary.
111	Military education.
830	Military societies, reports of various ones in Great Britain.
102	Military tournament.
102	Military maneuvers, with maps, etc.
300	Military rank and the tactical composition of units.
233	Mines in British Columbia.
403	Mobilization store tables for the field army.
530. 1	Modern military tactics (résumé).
513	Modified Lee-Enfield rifle.
531	Mounted infantry in England.
500. 2	Musketry instruction and target practice.
210	National army.
230	Naturalist in the Guianas.
940	Naval expenditures for 1880, 1890, 1900, 1901, 1902, 1903.
902	Naval estimates, 1904–5.
210	News from the Indian army (British).
420	New equipment of the British infantry.
821. 4	New galloping ambulance.
513	New short rifle.
513	New service rifle.
513	New rifle for the British army.
210	New "Tommy Atkins."

513	New English rifle.
610	New Vicker's cannon.
220	New plans for fortifications in Canada to be made by the Canadian department of militia and defense.
274	New York and Ottawa Railroad.
514	Note on reduced charges for service rifles.
260	Observations on the war in South Africa.
312.1	Orders and regulations of the British army.
121.5	Orders issued for establishment of new cavalry school, Netheravon.
240	Ordnance expenditures.
251	Ordnance factories.
500.2	Palma match.
322.4	Pay of enlisted men.
342.4	Pay of officers.
820	Pay for those in hospital service.
513	Prize for automatic rifles.
200	Present military situation in Somaliland, 1904.
210	Probable changes in the English army.
343	Promotion of officers.
341.2	Promotion of enlisted men.
274	Proposed Canadian railroad to the Yukon district.
220	Proposed home shipping port for Canada.
274	Proposed railway from Winnipeg to Hudson Bay.
613	Quick-firing field artillery in the field.
710.4	Railroad construction.
274	Railroad from Cape to Cairo, Africa.
610	Range table for the 15-pounder Q. F. gun.
342.1	Ranks of the army officers.
260	Records of the South African war (two articles).
300	Referring to army order 89–1904.
216	Regimental establishments of the regular and auxiliary forces.
220	Regimental establishments.
403	Regimental staff of corps engineers.
120	Regulations for the admission to military colleges.
850	Regulations for the army medical service.
600.1	Regulations for the army ordnance service.
420	Regulations for the clothing of the army.
600	Regulations for the care and preservation of material.
710	Regulations for the engineer service.
120	Regulations for the English military schools.
102	Regulations for mobilization.
122.3	Regulations for staff college.
400	Regulations for the supply barrack and transport services.
850	Regulations for the veterinary service.
520.3	Regulations for the yeomanry.
210	Reorganization of the army (two articles).
600.2	Report on artillery target practice.
300	Report of Lord Escher's committee on war-office reform.
213	Report of militia and defense.

213	Report on the Royal commission on militia and volunteers.
500. 2	Return of the number of rifle ranges in the United Kingdom.
510	Rifle holder for mounted troops.
200	Rights and duties of neutrals in time of war
313	Rules of procedure.
200	Russia and India.
200	Russia on the Pamir and the fortifications of Pamirsky post.
510	Rust and erosion in small arms.
210	Schemes for the reorganization of native cavalry regiments.
616	Seacoast guns.
718	Searchlights in telegraphy and telephony.
600. 2	Service prize firing and efficiency for service in the garrison artillery.
607	Siege artillery.
613	Siege artillery drill regulations.
513	Short Lee-Enfield rifle mark 1.
101	Some lessons from the Boer war, 1899–1902.
500. 1	South African cavalry maneuvers.
445	South Africa as a breeding ground for remounts.
210	Statements of Lord Dundonald concerning military affairs.
240	Statement of military savings bank.
101	Strategical lights from South African war.
200	Strength of British force in Tibet.
101	Studies from the South African war.
924	Submarines in England.
924	Submarines.
723	Submarine boats.
345	Superannuation act, civil employment of officers.
101	Tactical study of the war in South Africa.
500. 2	Target of the future: An electrically operated, self-registering, sectional target.
613	Test of field material in Brazil (75 mm. Vickers)
260	Tibetan expedition.
260	Tibet and the British expedition.
200	Tibet.
922	Torpedo in war.
921	Torpedoes in action.
402. 7	Traction engine for St. Louis.
609. 1	Training of the garrison artillery signaler.
911	Training boys for the sea.
113	Training return of the yeomanry.
104	Transmission of orders in the field.
200	Turkestan and a corner of Tibet.
920	Twin-screw shallow-draft boat *Widgeon*.
200	United States capital in Canada.
610	Vickers-Maxim jointed gun for mountain service.
300	War office reconstruction (two articles).
300	War office council.
300	War office reform (administrative).
920	War-ship tonnage.

610	War material, guns, etc.
513	Wind-gauge sight for rifles.
260	Why Ladysmith was not captured.
440	Zebra horse hybrids.

GUATEMALA.

210	Military situation (2 articles).
200	Republic of Guatemala.

HONDURAS.

233	Commercial situation.
210	Military situation.

ITALY.

210	Army, organization, strength, and reform.
102	Army maneuvers in Italy, 1903.
101.2	Artillery in fortress warfare.
240	Budget, 1904–5.
610	Caliber of field guns, comparisons, etc.
520.4	Cavalry saddle and manner of packing it.
802	Cycling in national defense.
312.2	Discipline and the press in Italy.
610	Effect of 6.5 mm. repeating guns against living targets.
520.7	Equitation and hippological sports.
402.7	Failure of the automobile.
600.4	Harness and traction of carriages in the Italian artillery.
530	Infantry, Bersaglieri in Italy.
610	Iron gin for raising artillery material.
613	Italian field artillery.
607	Italian siege artillery.
823	Italian Red Cross.
102	Maneuvers of 1903 (2 articles).
103	Manual of Italian gymnastics.
103	Manual of gymnastics for Italy.
230	Maps showing maneuver grounds.
402.1	Mechanical transportation; motor traction in the Italian army.
820	Medical statistics of the Japanese army.
402.1	Military automobilism.
340	Military career, general conditions of the officer's life.
613	Mounting of field guns, model 1896, 75a.
902	Naval budget, 1904.
920	Naval strength of Japan and Russia.
600	New artillery batteries organized.
731	New discovery in telegraphy.
726	New explosive Prométhée.
513	New Gun (De Rigolti).
613	New Italian field gun, 75 mm.
451	New pocket for rations.
320	Noncommmissioned officers; recruiting, training, and conditions of service.

610	Opinion of the rapid-fire gun (2 articles).
613	Practical instruction for packing and loading of field-artillery material.
711. 1	Portable houses.
342. 1	Rank of army officers.
909	Rank of naval officers.
212	Recruit statistics.
103	Regulations for military gymnastics.
445	Remounts and remount depots.
600. 2	School of artillery fire at Nettuno.
102	Seat of the grand maneuvers, 1903.
216	Stations of troops, 1904.
520. 7	Strange training of a horse.
210	Strength of armies of the double and the triple alliances.
102	Studies commenced by the General Staff for the maneuvers, 1904.
500. 2	Target practice in Italy.
321. 1	Tests for defects of vision in fitness examinations.
719	Torpedoes ordered from the Whitehead torpedo factory.
808	Two incidents proving the usefulness of war dogs in hospital service.
850	Veterinary service in Italy.
102	War in time of peace; maneuvers, 1903 (2 articles).

JAPAN.

210	Army (3 articles).
200	Army and navy.
342	Age limits of officers.
342	Ages of officers.
342. 4	Allowances in case of casualties.
513	Arisaka magazine rifle.
510	Armament of the infantry.
510	Arms of the Russian and Japanese.
210	Army strength (3 articles).
200	Army and navy.
210	Army strength and organization.
600	Artillery troops.
600	Artillery and technical troops.
613	Artillery.
306. 1	Attachés with the Japanese army.
200	Beginning of the siege of Port Arthur.
120	Calendar of the Imperial University.
513	Caliber of the rifle.
260	Causes of the Russo-Japanese war, 1904.
210	Changes in the army.
200	Conditions in the Far East, Manchuria, Japan, etc.
260	Current news about the Russo-Japanese war (2 articles).
200	Daily war notes, general history of the war.
200	Daily war note, Russian army collecting cars, etc.
200	Distribution of the forces in the Shantung Province.
200	Divisional commands in Manchuria.

822.1	Effect of the Shimose shell.
900	English view of the Russian and Japanese fleets.
200	Extreme Orient.
900	Fighting vessels on which the Mikado's people rely for victory.
260	First description of the battle of Yalu.
101	First lessons from the Russo-Japanese war (4 articles).
200	Forecast of the operations of the East.
201	Foreign military instructors.
412	Fuel supply of the Japanese navy.
200	General conditions at Vladivostok.
230	Geographical sketch of the seat of war in Asia.
610	Guns of the Japanese army.
200	Handbook of Japan.
900	Illustration of Japanese ships.
200	Important announcement of Japan's policy.
200	Improvements and fortifications.
610	Japanese artillery.
260	Japanese capture four ships by use of Russian signals.
613	Japanese field guns.
210	Japanese armed strength.
200	Japanese attack on Port Arthur repulsed.
900	Japanese and Russian fleets.
200	Japanese disaster at Port Arthur.
200	Japanese peril.
200	Japanese as citizens and soldiers.
613	Japanese and Russian field artillery.
200	Japan's progress during the last decade.
200	Japan and Russia.
260	Japan-Russian war.
900	Japan's war fleet.
200	Korea, Japan and Russia.
200	Land war in East Asia and the prospects.
200	Manchuria and Port Arthur.
103	Maneuvers, 1903.
260	Manifest of Nicholas II announcing war with Japan.
231	Map of the theater of war in the extreme Orient, 1904.
231	Map of the Far East.
231	Map of Japan.
820	Medico-military organization of the Japanese army.
110	Military education.
230	Military geographical outline of the territory involved in the Russo-Japanese war.
220	Military ports.
200	Military situation in Korea.
200	Military strength.
513	Murata magazine rifle, 8 mm.
907	Naval architecture in Japan.
926	Naval guns.
900	Naval strength and organization.

220	Naval ports and strategical zones.
900	Navy (two articles).
233	New Japanese treaty of commerce.
920	New Japanese battle ship.
200	Notes on the Russo-Japanese war.
211	Officer strength.
200	Participation of Chinese men in war.
200	Participation of Chinese men in Russo-Japanese war.
734	Pigeons in the war.
103.2	Popular military sports.
200	Power of Japan.
342.1	Rank of army officers.
823	Red Cross Society in Japan.
510	Reference to the Shimose shell.
306.1	Regulations for foreign officers.
110	Reports concerning the schools.
200	Report concerning conditions, military and civil, in Japan.
200	Report of a month's travel in Japan and China.
210	Report of the Japanese army.
200	Reports from the Japanese war.
233	Resources of Japan and Russia.
513	Rifle (6.5 mm.) compared with the Russian rifle.
513	Rifles in the Japanese army during the Russo-Japanese war.
513	Rifle (6.5 mm.), M. 1897.
513	Rifle (Arisaka).
200	Russo-Japanese war (21 articles).
200	Russian-Japanese war, Port Arthur.
200	Russian-Japanese crisis.
613	Russian and Japanese field guns compared.
260	Russian protest against the alleged violation of international law.
260	Russian war telegram from the Russo-Japanese war.
909	Sailor's calling in the Japanese navy.
200	Situation up to date in the Eastern question.
200	Situation at Port Arthur (daily war notes).
510	Small arms of the Russian and Japanese armies.
513	Some data about the new Japanese 6.5 mm. rifle, "model 1897."
216	Stations of the Japanese army.
200	Strategic value of Port Arthur.
200	Strength of Russia and Japan in the war and general situation in the Far East.
100	Tactics and strategy.
700	Technical troops (two articles).
200	True interests of Great Britain in the war between Russia and Japan.
920	Two new Japanese battle ships.
200	Two important bases for naval operations.
102	View of the imperial maneuvers at Himeji Environs
920	War ships.
920	War ships, illustrated.
920	War ships at the beginning of the war with Japan.

920 War ships at the beginning of the Japanese-Russian war.
200 War in the Far East (two articles).
231 Y. M. C. A. map of Tokyo.

KOREA.

210 Army.
210 Army organization, armament, etc.
210 Army strength and organization.
200 Description of Korea.
220 Fortifications of Korea.
200 General description.
200 General administration.
230 Geography of Korea.
200 Government and administration of Korea.
260 History of Korea.
200 Korea as the prize of war.
231 Map of Korea and the coast of Manchuria.
230 Military geographical outlines of the territory involved in the Russo-Japanese war.
200 Military situation.
233 Natural resources (commercial), economic situation.
270 North China and Korea.
210 Notes on the Korean army.
233 Population.
274 Railways.
200 Russian and Japanese troops clash on Korean territory.
200 Situation in Korea.
200 A visit to the Koru region and southern Korea.

MEXICO.

230 Answers to War Department questions concerning geographical information.
233 American investments in Mexico.
240 Budget estimate for 1904–5.
110 Catalogue of books used in military education.
233 Charcoal iron in Mexico.
274 Concessions for the national railway.
200 Condition of Mexico in case of war.
231 Corrected map with red lines showing corrections.
233 Customs receipts.
230 Data concerning Durango.
200 Description.
230 Description of the country.
200 Description of Mexico.
230 Description of Sonora.
233 Development of industries.
230 Development of Mexican industries.
510 Elementary lessons concerning portable arms.
200 Face to face with the Mexicans.

613	Field artillery.
233	Foreign commerce in 1903.
200	General descriptive guide of Mexico.
200	General description of conditions in Mexico.
230	Geographical names of Mexico.
274	Growth of Mexican railroads.
920	Gunboats.
260	History of the reign of Maximilian I and the French intervention in Mexico.
233	Industrial and financial conditions in Chihuahua.
312	Law of organization of the army.
230	List of geographical names.
231	Map of the city of Tuxpam.
274	Merger of government railroads.
210	Mexican soldier.
200	Mexico and her capitals.
200	Mexico in 1903.
300	Military government in Mexico.
900	Naval construction.
200	Picturesque Mexico.
274	Railroad improvements in Mexico.
230	Record of a journey through Mexico.
251	Regulations for the administration and intendance of the national arsenal and floating docks.
210	Report of the secretary of war.
233	Rubber culture in Mexico.
274	Something about the Mexican international railroad.
230	Territorial divisions of Mexico.
274	Veracruz and the Pacific railway.
260	Yagui war.

MOROCCO.

200	Condition in Morocco.
200	General idea of the geography, government, etc. (two articles).
200	Military situation.
200	Morocco and the Perdicaris affair.
200	Morocco question.

NETHERLANDS.

802	Additions to the cyclist corps regulations.
613	Arming the horse artillery.
312.1	Army orders and regulations, 1903.
530.1	Command, etc., of the infantry.
600.1	Drill regulations for home and field artillery.
613	Field gun 75 mm.—Minister's memorandum on tests of guns of Cocherill, Schneider, Ehrhardt, and Krupp systems.
102	Field maneuver regulations.
520.1	Foot training of cavalry.
610	Fortress artillery.

615	Future mountain gun of the Dutch East Indian artillery.
500.2	Heins's system of targets.
613	Krupp barrel-recoil R. F. field gun about to be adopted.
613	Krupp field gun adopted.
811	Machine guns, their tactical use, and their value for the Dutch army.
902	Naval estimates for 1904.
433	New tent knapsack.
520.1	Principles of instruction for the cavalry.
603	Projected rearmament and increase of the field artillery.
604.1	Provisional regulations for the training of the horse artillery.
613	R. F. guns for the Dutch artillery.
613	Rapid-fire guns in Holland and Germany.
276	Regulations and additions governing the ferries, etc.
453	Regulations concerning field ovens.
510	Regulations concerning small arms.
403	Regulations for the interior service of the infantry.
402	Regulations concerning transportation.
420	Regulations for uniforms and equipment.
200	Relations of the Netherlands and Belgium.
210	Reorganization of the field army.
820	Sanitary equipment of Dutch army.
520.1	School of the platoon, foot, cavalry.
520.1	School of the squadron, cavalry.
500.2	Target practice regulations for the infantry.
402.4	Transportation of troops by rail.

NICARAGUA.

233	Commercial situation.

NORWAY.

422	Army.
613	Battery tests at Lexdal.
240	Budget for 1903–4.
240	Budget for army and navy.
613	Field artillery with carriage recoil.
240	Military budget.
902	Naval budget.
320	Noncommissioned officers; recruiting, training, and conditions of the service.
613	Rapid-fire field artillery.
420	New uniform and equipment of the Norwegian infantry.

PANAMA.

200	Control of the approach to the Panama Canal.
200	Discussion of the policy of eminent domain.
200	Journey in Panama.
200	Ratification of treaty by United States; troops sent to the Isthmus.

200	Republic of Panama.
820	Solving the health problem.
731	Wireless telegraphy from Panama to New England.

PARAGUAY.

260	Forgotten war, United States against Paraguay.
260	Historical résumé.
260	War of 1867.

PERU.

230	Commercial and natural resources.
200	Concerning the adhesion of the Government to principles of the Geneva convention of August 22/64, and those of The Hague Convention.
233	Mineral wealth.
200	Peru and Brazil.
274	Railroad development in Peru.
200	Report of French mission, with maps.

PORTUGAL.

322	Length of service, two years.
831	Rifle clubs.
613	Rearmament of field artillery.
240	War budget, 1904–5.

ROUMANIA.

210	Army (two articles).
240	Budget, 1904.
123.5	Curriculum of infantry recruit schools.
734	Establishment of carrier-pigeon stations.

RUSSIA.

440	Apparatus for entraining obstinate horses.
606.2	Application of Lieutenant Galafré's apparatus for chamber exercises representing seacoast firing.
613	Artillery.
610	Artillery material compared with that of Japan.
510	Armament of the infantry.
210	Army for 1900.
200	Army and the fleet of Russia.
210	Army strength, organization, etc.
210	Army strength in the Far East.
210	Army strength.
210	Army of to-day.
210	Army list for April, 1904.
211	Army register, April 1, 1904.
712	Bazhanov's plan of provisional fortifications.

240 Budget for 1904.
260 Causes of the Russo-Japanese war.
520 Cavalry.
520. 6 Cavalry scouts.
210 Changes in the organization of the Russian army occasioned by the outbreak of the Japanese war.
216 Changes in stations in 1903.
260 Circular protesting against the violation of international law by Japan.
240 Concerning the budget.
200 Conditions in East Asia.
520 Cossacks.
530 Cossack and Sowar.
530 Creation of East Siberia rifle brigade.
260 Current news about the Russian-Japanese war.
920 Description of the Russian warships.
200 Description of the situation.
920 Disabled Russian cruiser *Novik*.
100. 1 Discipline in the Russian army.
900 English view of the Russian and Japanese fleets.
900 English view of the fleets of Russia and Japan.

SALVADOR.

233 General commercial conditions.

SANTO DOMINGO.

200 Problem of the United States in Santo Domingo.

SERVIA.

120 Administrative personnel and faculty of military schools.
210 Army.
210 Army organization after Alexander's death.
211 Army register.
312 Changes in the military law.
900 Changes in organization of navy command.
303 General staff, personnel.
314 Judiciary, personnel.
820 Measures taken to reduce the frequency of venereal diseases.
300 Ministry of war.
123. 6 Schools for artillerymen.
030 State almanac.
233 Industrial life in Russia.
200 Interests of Great Britain in the war between Russia and Japan.
233 Japanese interests in Siberia.
200 Korea-Japan and Russia.
260 Kuropatkin appointed commander in chief of land forces.
210 Land forces available in East Asia.
200 Legend of Russian friendship for the United States.

102	Maneuvers at Wodawa, 1903.
102	Maneuvers for 1903.
260	Manifest announcing war with Japan.
231	Map of Vladivostok.
231	Map of Kamchatka.
200	Method of warfare and conditions in Manchuria, number of men sent to seat of war, etc.
274	Military aspects of the Trans-Siberian railway.
240	Military budget, 1904.
274	Military railroads.
210	Military system of army strength.
618	Mortars, 230 mm.
618	Mortars, 200 mm.
618	Mortars, 150 mm.
920	Names and descriptions of various vessels in the navy.
920	Naval strength of Japan and Russia.
900	Navy compared with the Japanese navy.
900	Navy, illustrated.
600. 2	Night firing of a rapid-fire battery.
320	Non commissioned officers recruiting, training, and conditions of service.
260	News about Russo-Japanese war.
707	Organization of the telegraph troops.
402. 1	Organization of train troops.
231	Port Arthur.
220	Port Arthur fortifications.
220	Port Arthur, Vladivostok, and Dalny maps.
200	Progress in the army in 1903.
276	Proposal of American syndicate to build ship canal.
711	Provisional earthworks according to Russian methods.
711	Provisional works according to Russian system.
920	*Petropvlovsk*, the Russian battleship.
122. 3	Qualifications of professors of the General Staff Academy.
342. 1	Rank of the army officers.
909	Rank of the naval officers.
513	Rifle, 7.6 mm., compared with the Japanese rifle.
274	Rolling stock with interchangeable axles for the Russian gauge and the European (broad) gauge.
200	Russia and India.
200	Russia on the Pamir and the fortifications of the Pamirskij post.
613	Russian army and its guns.
210	Russian army, with illustrations.
210	Russian army in 1903 (two articles).
210	Russian army and its guns.
920	Russian Baltic Sea fleet.
900	Russian fleet.
900	Russia's four fleets.
613	Russian and Japanese field guns compared.
102	Russian imperial maneuvers at Pskof.

112	Russian language in the Berlin war school.
274	Russian military railroad.
900. 2	Russian naval discipline.
900	Russian navy.
513	Russian rifle.
200	Russians evacuating fort Shanghai-Hwang.
200	Russia's friendship for the United States.
200	Russia's strength in Eastern Asia.
220	Russia on the Frontier and Pamiriskij Post.
200	Russian-Japanese crisis.
260	Russo-Japanese war (10 articles).
820	Sanitary organization of the army.
617	Siege position guns, etc. (3 articles).
274	Siberian-Manchurian railways.
510	Small arms of the Russian-Japanese armies.
210	Strength of armies of the double and triple alliances.
924	Submarine boat of Bubnov.
719	Torpedoes ordered from the Whitehead torpedo factory.
402. 1	Train troops reorganized.
400	Transportation and supply in the Russian army.
210	Two months' visit of a Prussian officer in the Russian army.
210	Two months' visit in the Russian army (Prussian officer's account).
101	Use of scouts in Russia.
220	Vladivostok map.
231	Vladivostok and vicinity.
279	War harbors in East Asia.
520	War organization of the Transbaikal Cossacks.
920	War ships in the East.
260	War telegrams from the Russo-Japanese war.
200	Will the trans-Siberian railroad fail Russia when she needs it most.
200	Far eastern problem.
453	Field cooking stove.
613	Field guns.
453	Field ovens.
274	Field railway over the Baikal.
900	Fleet.
900	Fleet at the outbreak of the Russo-Japanese war.
220	Fortifications of Port Arthur.
230	From Irkutsk to Harbin.
530. 3	Further development or the reserve infantry.
200	General description of Russia in Siberia and East Russia.
200	General situation in St. Petersburg.
233	Gold reserve in Russia.
613	Goniometer of Russian field gun.
613	Gun 76.2 mm M. 1900.
230	Health and settlement of Siberia.
101. 6	History of scouting in Russia.
110	Illiteracy among recruits in 1885, 1896, 1898, and 1900.
900	Illustrations of Russian ships.

SPAIN.

733	Aerostatics in Spain.
211	Army list for 1904.
402. 7	Automobiles and automobilism.
710. 2	Description of a military bridge.
603. 2	Experiments in field-artillery target practice.
240	Modification in the budget, 1904.
613	Modifications in the organization of the artillery.
618	Making molds and casting gun carriages (steel) for howitzers.
412	Petroleum as fuel for railroads.
733	Remarks concerning dirigible balloons.
714	Rules for making calculations in regard to floors and columns of reenforced cement.
606	Seacoast artillery.
101. 6	Scheme for the instruction of artillery patrol.
260	United States against Spain.

SWEDEN.

613	Field experience with the new field gun (70 mm. M. 1902).
220	Fortifications and land defenses.
902	Naval budget, 1902–3.
520	New articles in Swedish medical equipment.
320	Noncommissioned officers, recruiting, training, and conditions of service.
342. 4	Officer's pay.
123. 6	Project of regulations for schools for artillery.
210	Reorganization of the army.
331	Rifle clubs.

SWITZERLAND.

520. 1	Adoption of new cavalry regulations.
210	Army of the Swiss Confederation.
240	Budget for the year 1904.
420	Clothing and equipment.
530. 1	"Do the lessons of the Boer war render a change in our infantry drill regulations necessary?"
610	Experiments with Krupp guns 12 cm. carriage recoils.
600	Federal law concerning the new organization of the artillery.
613	Field artillery rearmament.
613	Field gun 84 mm. to be provided with a barrel-recoil device.
453	Field kitchens cooking directly in soldiers' bowls.
608	Field howitzers in Switzerland.
101. 1	Field service instructions.
200	General statistics concerning the army and conduct of military affairs for 1903.
101. 1	Instruction in field service.
717	Law concerning the topographical bureau of the Confederation.
210	Military reorganization.

613	New armament of field artillery.
603	New laws for the organization of the artillery.
445	Organization and management of cavalry remount establishment.
613	Organization of the Swiss field artillery.
210	Organization of the Swiss army in battle.
613	Reorganization of the field artillery.
603	Reorganization and new formations of field artillery.
610	Rearmament of the field artillery.
613	Rearming the Swiss field artillery.
831	Rifle clubs.
102	Swiss maneuvers.
402. 9	Use of skees.
500. 2	Visit to the infantry target-practice school.

TURKEY.

210	Army changes.
600	Artillery organization.
230	Map of Turkey.
200	Military situation in European Turkey.
202	Mobilization in 1903.
210	Present condition of the Turkish army in Macedonia.
274	Railroads of European Turkey and of Bulgaria as war equipment.
100	Training and maneuvers in the army.
101. 2	Turkish earthworks in 1877–78. Turkish defensive tactics.
260	Turco-Russian campaign (three articles).
210	View of the Turkish army.
210	War strength of Turkey and Bulgaria.

UNITED STATES.

920	Accident to the guns of the *Iowa*.
200	American rule in the Philippines..
210	Annual report of secretary of war, 1899–1903.
200	Annual report of the war department, 1903. (Vol. XIX, Ordnance.)
500. 2	Apparatus for teaching gun practice.
312. 1	Army regulations, 1901.
312. 1	Army regulations for 1901.
821	Army hospital, the Presidio.
102	Army and navy maneuvers as seen from Fort Williams, with some comments on the rules.
102	Army and navy maneuvers of 1903 as seen from Fort Williams.
102	Army maneuvers.
102	Army maneuvers (Portland, Me.).
102	Army and militia maneuvers.
500. 2	Army small arms target practice.
103	Athletics in the army.
513	Attachment for firearms.
513	Automatic gun.
402. 7	Automobile road train.

102	Autumn maneuvers, 1903.
200	Biographies of the honorary board of Filipino commissioners.
274	Bonded indebtedness of railroads.
610	Breech mechanism for ordnance.
731	Cable cutting, its purposes and the instruments used.
200	Canada's idea of militarism in United States.
734	Carrier pigeons for newspaper service.
711	Castremetation, suppression of dust in military camps.
520. 4	Cavalry mounts.
442	Cavalry remounts.
520. 1	Cavalry and the new doctrine.
730	Coast signaling system.
102	Colonel Wagner on army maneuvers.
102	Colonel Wagner on the Fort Riley maneuvers.
821. 4	Combined ambulance and ammunition carts.
233	Commercial and natural resources.
200	Constitutionality of the tea-inspection law.
530. 1	Changes, additions, and omissions made in the revision of infantry drill regulations.
279	Changes in navigation.
458	Chemical analysis of water.
101	Criticism concerning the low standing of the company administration in comparison with that of the other branches of the service.
920	Development of the submarine in the direction of increased scope.
230	Dictionary of plant names of the Philippines.
820	Differential diagnosis of typhoid fever.
718	Electricity.
230	Establishment of national park at old Fort Niagara.
232	Estimates of the population of the larger cities.
727	Explosion on the *Missouri*.
260	Facsimile of the declaration of independence.
613	Field gun—description.
820	Fight of the Porto Rican government with anæmia.
260	Filipino commissioners at St. Louis.
920. 1	Fine performance of the battle ship *Kentucky*.
500. 2	Firing regulations for regular army and organized militia.
500. 2	Firing instructions for small arms.
900	Fleet of the United States.
102	Fort Riley maneuvers, 1903.
000	General indexes of publications.
260	General Young in North Luzon.
230	Geography of the United States and possessions.
200	Greater America, prospects of the United States.
230	Gutta-percha and rubber of the Philippines.
926	High velocity 6-inch wire-wound gun for the United States navy.
420	History of cavalry of northern Virginia.
440	Horse equipment, the Pullman pack.
500. 2	How best to promote practice in peace as a preparation for war.
500. 2	How to promote rifle practice among our countrymen.

231	Indexed atlas of the United States.
530.1	Infantry drill regulations.
106	Instructions for salutes and ceremonies.
450	Insulating apparatus for canned goods to prevent ptomaine poisoning.
500.1	Letters (copies) of the board for revising small-arms firing regulations.
000	List of maps of America, 1901.
233	Lithotype.
520.1	Manual for noncommissioned officer of a troop of cavalry.
831	Matches at Sea Girt.
231	Map of Alaska.
231	Maps of the United States.
120	Military chautauqua.
500.2	Military rifle shooting in America.
500.2	Military rifle shooting.
233	Mineral resources.
300	Military secretary's department.
412	Military and strategical value of oil fuel.
308	Memorandum for the army service bill.
308	Memorandum on the distinguished-service bill.
213	Militia.
200	Monroe doctrine hollow, South American and German view.
900.1	Movable base in naval operations.
326	National home for disabled volunteer soldiers report.
500.2	National trophy match, 1903.
311	Naturalized citizens and their protection abroad.
902	Navy maneuvers.
900	Naval organization.
900	Navy, strength, organization, etc.
520.1	Need of practical work for our cavalry.
821	Needs and equipment for national guard hospitals.
500.2	New departure in rifle shooting for national guard.
733	New method of inflating balloons in war time.
733	New Nemethy flying machine.
912	New training brig *Boxer*.
230	Northern and northwestern lakes.
426	Officer's equipment.
210	Organization of the army in Porto Rico.
820	Organization and conduct of the army medical supply department.
102	Our autumn maneuvers, 1903.
102	Our autumn maneuvers.
233	Our food imports, Argentine to the rescue.
900	Our navy at Santo Domingo.
926	Our naval guns.
600.2	Ordnance and artillery target practice.
900	Our naval system of naval comparison.
924	Our torpedo-boat flotilla.
200	Panama canal and the Mississippi valley.
200	Philippines.

900	Philippine shipping register, list of vessels, 1903.
716	Photography, treatise on the lens.
920	Present status of the protected-cruiser type.
102	Precautions to be taken against commission of depredations during maneuvers.
820	Prevention of infectious diseases.
303	Probable changes so as to provide for a representative of the medical department on the general staff.
233	Production of precious metals.
820	Prophylaxis of venereal diseases.
725	Range finder, invention by Lewis.
342. 1	Ranks of army officers.
342. 4	Regulations for officers' pay.
322. 4	Regulations for the pay of enlisted men.
200	Regulations of the United States with Colombia.
820	Report of epidemic of diphtheria on the U. S. S. *Buffalo*.
412	Report of our navy liquid fuel.
308	Reward for distinguished service.
510	Rifle used by American team in competition for Palma trophy.
811	Rules and regulations of the National Rifle Association and targets and scoring cards.
515	Saber *v.* revolver.
106	Salute and ceremonies.
820	Serum laboratory, bureau of government laboratories.
200	Situation in the Philippines and containing corrections of No. 34 "Colonial army systems."
500. 2	Small-arms practice in the militia.
103	Soldierly bearing, health, and athletics.
110	Soldier's handbook.
233	Statistics of trade with Latin America and Great Britain.
924	Submarines in coast defense.
731	Submarine telegraphy.
500. 2	Subtarget machine gun.
412	Success in the use of liquid fuel by navy.
711. 1	Suppression of dust in military camps.
102	Survey of the maneuver grounds at West Point.
717	Topography and reconnaissance.
900	Torpedo flotilla.
233	Trade in the Philippines.
213	Training of the organized militia.
820	Trypanosoma and trypanosomiasis, with special reference to surra in the Philippine Islands.
000	Union list of periodicals, transactions, and allied publications currently received in the principal libraries in the District of Columbia.
820	Value of statistics in connection with venereal diseases.
922	Value of torpedo boats; experiences in Manila.
402. 2	Vehicles.

URUGUAY.

210	Army strength.
233	British losses in Uruguay.
200	Description of conditions in Uruguay.
200	General information.
200	Pitiful outlook of Uruguay.
200	Public debt of Uruguay.
200	Republic of Uruguay.
260	War between Uruguay and Paraguay. 1867.

VENEZUELA.

610	Concerning canons prepared for defensive purposes.
270	Country traversed by the La Guira and Caracas Railway Company.
200	Dictatorship of Venezuela.
233	Establishment of a custom-house at Tucacas.
200	Great Britain in Venezuela.
230	Guide and directory of Caracas.
230	Journey through Venezuelan Guyana.
200	Message of Gen. Cipriano Castro to the National Congress of Venezuela.
274	Puerto Cabello and the Valencia Railroad.
200	Quinlan and Warner *v.* the New York and Bermudez Co.
277	Steamship line to Venezuela.
233	Trade outlook in Venezuela.

INDEX.

Page.

- Age of officers:
  - France, relieving aged artillery officers 33
  - Germany, age of officers 55
  - Japan, age limit of officers 186
- Armament:
  - Great Britain—
    - Guns and armor plate 148
    - Guns used during South African War 144
  - Korea 17
- Artillery:
  - Austria-Hungary—
    - Field gun 226
    - Howitzer and mountain batteries 6
  - France—
    - Field gun 226
    - Gun for horse artillery 33
    - New mountain gun 33
  - Germany—
    - New field gun 54
    - Observation ladder for 65
    - Remarks on 64
  - Great Britain—
    - Artillery progress 144
    - Field gun 151
  - Japan, field gun 182
  - Russia—
    - Allotment of 210
    - Field guns 209, 226
  - Spain, field gun 216, 226
  - Sweden, reorganization of 217
  - Switzerland, field gun 226
- Austria-Hungary, notes on 4
- Barrel recoil field guns:
  - Austria-Hungary 224
  - Belgium 224
  - Bulgaria 225
  - Denmark 222
  - France 222
  - Germany 224
  - Great Britain 223
  - Greece 225

Barrel recoil field guns—Continued. Page.
- Italy 224
- Netherlands 224
- Norway 222
- Portugal 223
- Roumania 225
- Russia 225
- Servia 225
- Spain 223
- Sweden 222
- Switzerland 223
- Turkey 223

Bicycles on the battlefield:
- Austria-Hungary 8

Brazil, notes on 9

Bridge equipage:
- France 38

Budgets:
- Austria-Hungary, 1903 227, 228, 229
- Belgium, 1903 227, 228, 229
- Bulgaria, 1903 227, 228, 229
- Cuba, 1902-3 18
- Cuba, 1904-5 19
- Denmark, 1903 227, 228, 229
- France, 1903 227, 228, 229
- France, 1904 24
- France, report of M. Maujan 28
- Germany, 1903 227, 228, 229
- Great Britain, 1903 227, 228, 229
- Greece, 1903 227, 228, 229
- Italy, 1903 227, 228, 229
- Japan, 1903 183
- Japan, supplementary budget, 1904 184
- Mexico, current and proposed 201
- Netherlands, 1903 227, 228, 229
- Norway, 1903 227, 228, 229
- Portugal, 1903 227, 228, 229
- Roumania, 1903 227, 228, 229
- Russia, 1903 227, 228, 229
- Servia, 1903 227, 228, 229
- Spain, 1903 227, 228, 229
- Sweden, 1903 227, 228, 229
- Switzerland, 1903 227, 228, 229

Bulgaria, notes on 10

Chile, notes on 12

China, notes on 14

Commerce, Japan, in Manchuria and Northern China 186

Cuba, notes on 16, 18

Drawing instruments, the perspectartigraph 230

Page.
Drill regulations, Austria-Hungary, infantry 4
Employment of cavalry, France, ideas regarding 32
Equipment:
  France—
    Infantry pack and cartridge pouches 23
    Use of cork in cavalry and army supply services 34
  Great Britain 70
    New rifle-carrying equipment 139
    Soldier's pack 159
  Russia, movable kitchens 211
Field-firing practice, Great Britain, India 146
France, notes on 23
Germany, notes on 48
Great Britain, notes on 70
Harbor improvements:
  Chile 13
  Rio de Janeiro 9
Italy, notes on 169
Japan, notes on 182
Korea, notes on 16
Machine guns:
  Austria-Hungary 5
  Germany 54
Manchuria, notes on 196
  City of Harbin—
    Administration 197
    Administration improvements 197
    Industries and improvements 199
    Industries of Harbin 199
    Location and construction 196
    Population 197
    Transportation facilities 198
Maneuvers:
  Austria-Hungary 5
    Notes on 6
  France, 1903 35
    Note by General Metzinger, director 41
    Remarks on 38
    1904 maneuvers 43
  Germany, 1903 59
    French criticism of 67
    Remarks on 63
    1904 maneuvers 67
  Great Britain, 1903 153
    Captain Timpson's report 164
  Italy, 1903 169
  Russia, 1903 204
Mexico, notes on 201

Page.

- Miscellaneous 218
- Monetary standard, China 14
- Navy, the:
  - Battleships, etc.—
    - Chile 12
    - France 149
    - Germany 69
    - Great Britain 150
      - Armament of 166
      - Cost of maintaining 166
      - New vessels 166
    - Japan 187
  - Dockyards, Germany 69
  - Naval estimates—
    - France 45
    - Germany 68
  - Naval guns, Russia 212
  - Naval notes, Great Britain 167
  - Navy personnel—
    - Germany 68
    - Russia, naval cadets 210
- New aluminum alloy 229
- Officers' expenses:
  - Great Britain, reduction in 73
  - Russia 203
- Officers in foreign armies—China, officers in Prussian army 14
- Organization of Armies:
  - Bulgaria, reorganization 10
  - France 26
    - Alpine troops 38
    - Colonial toops 44
  - Germany 48
    - Mounted jaegers 52
  - Great Britain—
    - South African garrison 70
  - Japan 183
  - Korea 16
  - Russia 203
  - Sweden 217
- Pay of soldiers:
  - Great Britain 72, 76
  - Korea 16
  - Russia 203
- Pompoms, Great Britain 143
- Preservation of fresh meats, Germany 54
- Promotions:
  - Bulgaria 11
  - Great Britain 76

Promotions—Continued. Page.
- Korea 16
- Russia 203

Public debts, Mexico 201
Public works, Chile 12
Railways, Chile, construction of 13
Rations:
- France—
  - Improvement of 32
  - Regulations regarding 32

Recruit contingent:
- France 30
- Great Britain, recruiting and desertions 72

Recruiting law, France 30
Regulations:
- France, foreign tour of colonial troops 45
- Germany, calling out of reservists and men of Landwehr in 1904. 52

Russia, notes on 203
Schools:
- Great Britain, new cavalry school 72
- Russia 206

Sighting devices:
- Great Britain, patent for new 142

Small arms:
- China, order for 14
- Germany, new automatic rifle 53
- Great Britain, new service rifle 71, 152
- Russia—
  - Order for cartridges 14
  - Rifle 210

Smokeless powder, Great Britain, veloxite 143
Spain, notes on 216
Strength of armies:
- Austria-Hungary 6
- France 25, 29
- Germany 48
- Korea 16
- Russia, in the Far East 208

Tactics:
- France 56
- Germany 56
  - Ideas on the infantry attack 218
- Great Britain, tactical lessons from Boer war 218

Target practice:
- France—
  - Allowance of cartridges for 23
  - Regulations regarding 34
  - Korea 17

Page.

- Targets:
  - Austria-Hungary ... 5
  - France ... 34
  - Germany, disappearing targets ... 54
  - Great Britain ... 147
- Telegraph lines:
  - Brazil ... 9
    - Wireless communication ... 9
  - France, wireless telegraph posts ... 33
- Torpedoes ... 230
- Translations, list of ... 232
- Transportation, Japan, sea transportation for a division ... 185
- Uniforms:
  - Great Britain—
    - Boots ... 160
    - Campaign hats ... 159
  - Russia ... 204
- Wagon trains, France ... 39
- War office reform, Great Britain ... 77
- Welland Canal, the ... 230

○

W26.3^2:4

WAR DEPARTMENT . . . . . OFFICE OF CHIEF OF STAFF.
SECOND (MILITARY INFORMATION) DIVISION.
GENERAL STAFF.
No. 4.

SELECTED TRANSLATIONS

PERTAINING TO

THE BOER WAR.

April 1, 1905.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1905.

War Department.
Document No. 244.
Office of the Chief of Staff.

2

TABLE OF CONTENTS.

Page.

German Tactical Ideas: The Influence of the South African War. Translated from the *Revue Militaire des Armées Etrangères*, for August, 1903, by First Lieut. Clarence O. Sherrill, U. S. Corps of Engineers 5

Notes on the Artillery in the South African War. By P. Van Berchem, Major of Artillery. Translated from the *Revue Militaire Suisse*, for January and February, 1903, by Capt. William Lassiter, Artillery Corps, U. S. Army 21

Experiences of the English in the South African War as Regards Clothing and Equipment. Translated from the *Quarterly of the German Great General Staff* (*1903*), by Capt. Jacob F. Kreps, Twenty-second U. S. Infantry 51

The late South African War and its Lessons. By Gen. H. Bonnal (French army). Translated by Second Lieut. Charles M. Allen, Artillery Corps, U. S. Army 73

The German Infantry Regulations, as Tested by the Experiences of the Boer War. By Lieutenant von Gentz, Second Lorraine Infantry. Translated from *La France Militaire* (June, 1904), by First Lieut. S. M. De Loffre, Assistant Surgeon, U. S. Army 119

Tactical Deductions from the Boer War. By Lieut. Gen. A. von Boguslawski (German army). Translated by Capt. Fredrik L. Knudsen, Eighth U. S. Infantry 127

Bibliography of the Boer War.

Index.

Plates: No. 1. Battle of Colenso.
No. 2. Action at Spionkop.
No. 3. Action near Modder River.
No. 4. Battle near Magersfontein.

NOTE.

The following translations by officers of the Army in a measure reflect continental military thought with reference to the tactical deductions of the Boer war. Basing their opinions on the wars of Frederick and Napoleon, and the European experiences of 1870–71 and of 1877–78, as modified by subsequent improvements in arms and ammunition, French and German tacticians are loath to ascribe any serious revolution in tactical principles to the experiences of the Boer war; but rather that abnormal terrain, faulty handling, and widely divergent training, temperament, and armament of the opposing forces brought about unusual tactical maneuvers and formations which will not stand the test of future military operations conducted under normal conditions.

Doubtless the present Russo-Japanese war will decide, once for all, many of these tactical controversies. Meanwhile, until authentic and complete accounts of the campaigns in Manchuria are available for the military student, it will be interesting and instructive to form some idea of European tactical theories as affected by the Boer war, with a view to seeing how far they may be borne out by the present operations in the Orient. As an Anglo-Saxon people, having many similar institutions and racial characteristics, the study of the mistakes of the British army, primarily a volunteer army like our own, should be of more than ordinary interest; while the military successes and short comings of the mobile, poorly disciplined Boer militiamen—a militia of expert riflemen—should for obvious reasons be of value in outlining our future military policy.

The following translations are necessarily of limited extent. To the military student who would pursue the tactical study of the Boer war still further, the *German General Staff History of the Boer War* (translated into English by Col. W. H. H. Waters, R. A., C. V. O.), presents an accurate and highly professional narrative of the war, as viewed through German eyes; while the valuable French works of Langlois and Gilbert, and the German writings of Von Lindenau, and many others, entirely tactical in character, are available to students of these languages.

The Great Boer War, by A. Conan Doyle, and the *Times History of the War in South Africa*, give interesting accounts of the operations by nonmilitary writers; while the *Report of the Esher Commission on the Conduct of the War*, gives opportunity for reviewing the opinions of British participants as to the causes of success and defeat. From the Boer standpoint, *The Three Years' War*, by Gen. Christian De Wet, gives a good general idea of the fighting methods employed by the Boer commandos.

The thanks of the General Staff are due to the foreign authors and publishers of the following essays, more especially to Gen. A. von Boguslawski, of the German Army, and Gen. H. Bonnal, of the French Army, for courteous permission to publish translations of their valuable articles; and to the Librarian of Congress, for the complete list of the bibliography of the Anglo-Boer war, which follows the translations.

GERMAN TACTICAL IDEAS: THE INFLUENCE OF THE SOUTH AFRICAN WAR.

(Anonymous.)

Translated by Lieut. CLARENCE O. SHERRILL, Corps of Engineers, for the Second Division, General Staff U. S. Army, from the *Revue Militaire des Armées Etrangères* for August, 1903.

The events of the Transvaal have been frequently held out as a series of new and unexpected facts, demonstrating the folly of the present methods of fighting. It has been said that the frontal attack is impossible, even with greatly superior forces. Success was only expected with flanking movements, with a wide extension of the wings, threatening the flank, the rear, or, better still, the communications of the enemy.

Strategical offensive, tactical defensive was the secret of success.

The present methods used by European infantries met a sudden check and had to be entirely transformed.

As to the cavalry, it had made a failure. It was able to play only a secondary rôle in reconnoissance, and had to give up fighting on horseback.

It is proposed to show how the first two points, conception of the attack and the methods of infantry fighting, are viewed in Germany. The question of the use of cavalry will be the subject of a later study.

I.

In one of its last works[a] on the subject of the operations in the East of the First Army of the Loire, the German General Staff expresses its opinion clearly as to the "strategical demonstrations," transformed into a tactical defensive.

"Every operation," it says, "was directed against a *ligne d'étapes;* that is to say, against nothing, and the results ought to forcibly show that a similar maneuver, so-called strategic, would be useless as long as the enemies' armies remained intact."

---

[a] *The Movements of Armies and Deductions Therefrom.* (Berlin, 1902.)

"It is easily understood," we read further on, "that Bourbaki had thought of the plan which consisted in taking position at Villersexel. But a mission having an offensive character could not be transformed into a tactical defensive."

"Each improvement in armament," says Balk in his semiofficial course in tactics, "has conduced to the superiority of the defensive; but the army which has thought that it could give up the offensive spirit has always paid dearly for its error—the Austrian in 1859, the French in 1870, the Boers in 1900."

It is therefore by main strength that the Germans hope to win victory, and all their efforts tend to increase the power of their means of attack. But the attack is decided always, at a given moment, by a frontal action.

"In battle," writes Neckel, "even for divisions and army corps, there are only frontal attacks."

"After the Boer war," writes Boguslawski, "every attack was declared to be impossible. But the failures of the English are due as often to their bad dispositions, to the failure of energetic direction in the attacks, to their theoretical methods in no way appropriate to the conditions * * *. We believe that most of the time the result of the English attacks would have been the same in front of arms firing single shots, even when charging right up to the muzzles.

"If a combination of a flank attack with a front attack must be regarded as desirable," he adds, "it is wrong to consider the front attack pure and simple, as impossible, and the war of the Boers in no way permits our opinion to be contradicted."

Boguslawski therefore does not see in the failures of the English a new and surprising fact. For a century now, every compact formation falling suddenly under the fire of sheltered riflemen, at effective range, has been stricken with enormous losses. The *decisive range* alone has changed.

From 80 to 100 paces a century ago, it became 500 to 600 meters with the *chassepot*. It is now 800 to 1,000 meters. This is the only positive idea which the war of the Boers has caused to be, not discovered, but verified.

Lieutenant-Colonel de Lindenau is more affirmative even than Boguslawski, when he analyzes the battles of Magersfontein, Colenso, and Spionkop.

"These three battles," says he, "were pure frontal attacks. No attempt was made to combine an attack on the flank with the front attack. The British generals have been bitterly reproached in every language. This was wrong.

"The English generals decided on front attacks, because they were the only ones possible. To outflank the positions of the enemy was very difficult. The Boers mounted would prolong the threatened wing with their forces very weak elsewhere.

"Under these circumstances, *to throw back this thin line by a frontal attack was a very sane conception* * * *. But the assailant made the mistake of exposing himself with similar fronts. We never see the *desire of acting against a particular point, with units well in hand, attacking with the whole strength, with a sufficient depth to insure the bringing up of the attack to its maximum power progressively.* He who wishes to attack, must decide to engage without reservation up to the very last man. It is only when the last reserve has been employed that the attack can be considered as having been checked. Now, at Magersfontein the English had only 65 per cent of their effective strength engaged; at Colenso, 57 per cent; at Spionkop, 47 per cent. The smallness of the losses is, besides, a proof of lack of energy in the attacks."

So, according to Lindenau, not only could the frontal attacks succeed, but they were the only ones practicable. It is only the bad methods employed and, a grave accusation, the lack of energy, which has caused their failure.

The greatness and the suddenness of the losses undergone by the English has frequently been pointed out as an explanation of the profound moral depression of the assailant, and it has been concluded that new efforts before an "inviolable front" were useless. The German writers in general see the question from the standpoint of another period. Boguslawski, comparing the losses sustained by the Germans in 1870, to those of the English in the Transvaal, concludes that the effectiveness of fire on the field of battle has not been increased in thirty years.

"But," replies Caemmerer, "one must consider the small number of rifles engaged in front of the English, and the nature of the Boers' fire. Their fire is individual and has not the properties of our collective fire. The Boer chooses his adversary, watches him, and only fires when he is almost sure of hitting him. The relative smallness of the losses sustained by the English can be thus explained, and also how the latter were able to approach so close."

Perhaps their losses would have been greater in front of adversaries more numerous, and trained according to European methods. Perhaps these latter with less coolness might have opened fire farther away and have sent more bullets "into the air." In any case, we here enter the domain of hypothesis in face of which the facts present themselves with brutal force.

Notwithstanding the progress of armament, the per cent of losses sustained in battle constantly diminishes through the ages.

"The more the range of arms is increased," says Balk, "the greater the distance which separates the combatants, and the smaller become the losses. It is not in spite of the precision of the arms, it is because of it that the losses are actually less."

In support of his statement, he gives the following figures:

Percentage of losses on the field (victors and vanquished).

	Per cent.
Under Frederick	17
Napoleonic period	15
Crimean war	14
War of 1866	8
War of 1870:	
Before the fall of the Empire	9.5
After	3
Losses of the English at Magersfontein	7.4
Losses of the English at Colenso	5.8

For the battalions, suffering most at Magersfontein, the losses were 35 and 24 per cent.

For the battalions suffering most at Colenso, 24, 16, and 13 per cent.

To these latter figures Balk opposes the losses sustained by certain French and German battalions in 1870:

The 18th of August:
- Battalion of tirailleurs of the Guard, 44 per cent.
- First Battalion of the Second Regiment, 55 per cent.
- Fusiliers of the Eighty-fifth, 52 per cent in twenty minutes.

The 16th of August:
  One-half battalion of the Thirty-fifth, 9 officers and 150 men (out of 400) in five minutes.
The 6th of August:
  First French Tirailleurs, 53 per cent in fifteen minutes.

From the point of view of the severity of losses as well as of their suddenness, the events of the Transvaal offer, as we see, nothing particularly new.

The Black Watch and the Highlanders at Magersfontein, the three leading battalions of the Fifth Brigade at Colenso, can not envy the foot soldiers of the Eighty-fifth and Thirty-fifth German regiments, nor the French tirailleurs of the First Regiment.

Besides, the proportion of losses in 1870, before and after the fall of the Empire, shows eloquently enough the influence of the courage of the combatants.

Are the present European troops better than those of England? Perhaps they are no braver. They may be, at all events, better instructed, and, thanks to better methods, can preserve their morale more intact.

In judging the English troops severely, the Germans doubtless recall their own army of 1866, composed largely of reserves and inexperienced in all grades, since neither generals nor enlisted men had, as a rule, been under fire before.

This army, thanks to a sound course of training and education in time of peace, showed from the very first engagements a bravery superior to that of the Austrians, who had often been fighting since 1815. This fact is worthy of remembering. German writers are not therefore much impressed by the effects of modern armament, at least to the extent of believing a revolution necessary in methods of warfare. Good tactical instruction and the desire of conquering at all costs continues to be, in their eyes, the sure road to success. This success will be obtained by main strength on the field of battle, and only by attacking.

II.

If there is unanimity in Germany as to the absolute effectiveness of the frontal attack, discussion is, on the contrary, quite active as to the methods to be used. It is interesting, moreover, to find that all the arguments in vogue for the past three years are to be found in the studies written immediately after the war of 1870. As in the Transvaal, the assailant had employed at the beginning of that campaign defective methods of attack, and had suffered considerable losses. The problem which presented itself, as it presents itself anew to those who have lost sight of it or who have never considered it, is as follows:

How can the assailant establish himself at effective range with superior forces in face of the fire of the defense, secure superiority of fire over the latter, and approach closer and closer, so as to be able finally to take the position with a rush?

This *effective range*, as has been said, has been increased from about 500 meters to 800 or 1,000. The *ensemble* of the problem is not changed. The uneasiness in certain quarters has been very great. The English methods of attack were similar to those used at Templehof, at Döberitz to some extent, and especially at the imperial maneuvers. This flurry was the result of a sensational article in the New York Herald last summer, reporting criticisms (denied later, however) by the English and American generals.

"The Americans as well as the English," it read, "have been unanimous in declaring that the tactics of the German infantry would be impracticable in a real engagement. In modern war the German infantry would be useless. It would serve simply as a magnificent target for the fire of the enemy."

Nevertheless some voices without much authority have been raised to demand a revision of the regulations. A great many wished them kept intact; others, such as Scherff, desired more restricted regulations. The more moderate—probably the wiser—without being always of the same opinion as to the wisdom of some of the changes to be introduced, demanded a slight modification to insure harmony between the value of the instrument and its mode of employment.

The high authorities seemed to range themselves along this line. A confidential order of May 6, 1902, called attention to the power of present armament, which can cause the first units engaged to extend their fronts; also to the extreme vulnerability of every close formation on open ground.

Without waiting for the publication, already announced, of a monograph by the Great General Staff on the "Fire deductions from extra-European wars," the official point of view can be predicted. The range of ideas expressed for a year past in military literature permits the prediction.

This discussion will be resumed by taking for a starting point the lecture delivered by Lieutenant-Colonel Lindenau, chief of section of the Great General Staff, at Berlin, March 5, 1902.

The conclusions of this officer can be summed up as follows:

The obscure situation created by armament with rapid-fire guns and smokeless powder compels the first deployment to be "sparing and methodical." The first units engaged may extend their front, but only in such a way as to permit of reserving troops to give sufficient echelon in depth.

The front of the company can be extended to 130 meters, that of the battalion to 400 meters; but the fronts of the large units can not be increased proportionally—700 meters for the regiment, 1,500 meters for the brigade, are sufficient.

The front to be reconnoitered by means of patrols (scouts) crawling forward, under command of officers furnished with good field glasses.

Distribution of the skirmishers according to the terrain.

The opening of fire at about 1,000 or 800 meters. Seeking superiority of fire at that distance by increasing the fighting line to the necessary density.

The supports serve to maintain an intense fire from the firing line. No fixed rule as to reenforcements.

Very short rushes (30 or 40 meters) by small groups widely deployed, sent forward at varying intervals.

Arrange the regulations in accord with these principles, by having them prescribe the conditions of the advance by rushes and the conduct of the supports.

And Lindenau finished by the *Leitmotiv* of all the German variations in tactics:

"The offensive will maintain in the future its superiority and will still remain the best means of securing laurels."

The ideas expressed by Lindenau were undoubtedly shared by the recognized authorities. However that may be, they took the lead in the innovations attempted during the course of the past year. To be convinced of this it is only necessary to read in the pamphlet "The Attack of German Infantry" of 1902, the "criticisms" of some maneuvers at Döberitz.

Certain divisions at the imperial maneuvers are also seen maneuvering under the same forms as those which in the press have been called by the name of "Boer tactics;" but the enthusiasm for individuality at the beginning, for the advance of skirmishers and supports by small groups deployed, was not general.

Von Caemmerer protested at once against incorporating these expedients in the regulations. "The regulations are free enough to authorize them in case they are necessary," he says.

"The group of 8 or 10 men," says Major Hurt, "is not sufficiently organized. The company or the platoon are alone sufficiently officered to be led forward. As to the supports, they can be kept in hand for the purpose of having them always available. They must seek their safety in rapidity of movement—in utilizing up to the last the lines of communication rather than in the employment of widely extended formations."

"At one time after the war of 1870," wrote Von Scherff, "it was thought that in extreme deployment was to be found the sovereign remedy for the great sacrifices which we had paid for our success. To-day, in view of the checks received by the English after much smaller losses, the tendency is to look for the safety of the attack in the most complete individuality. The present propositions will doubtless be found as barren of results as were the experiments of 1872, and will disappear quite as quickly from the scene."

"The best means of sheltering one's self," said Von Stieler, "is not found in the terrain, nor in formations more or less complicated, but in the conduct of fire. The Boer tactics caused a loss of precious time with its fantasies. The troop is broken up into small fragments; these are still further divided; one is pushed forward, the other is held back; the voice of the chief is heard, these units are mixed up with each other, and the command is divided; the groups leave cover at a signal and throw themselves forward.

"All that is very pretty, but it is not war. The terrain and the point of view from which these formations are considered modify, however, all this question of vulnerability.

"In war only those units well in hand will be able to advance on the enemy. The way for them will be opened by the artillery."

An anonymous article from the *Militar Wochenblatt*, of October 18, 1902, is particularly interesting. After having loaded Lieutenant-Colonel Lindenau with praise, the writer takes serious exception to the conclusions of the lecturer. This article marks the variance of ideas.

"* * * The order of May 6 to the army," says he, "has increased the authorized fronts of the company and battalion in the firing line. This extension of the fronts ought not to lead to entering the engagement with thin lines, the fire-effect of which would be insufficient. The quintessence of infantry tactics is to give rapidly to the fire all the power possible at decisive ranges, or between the medium and short distances of 800 or 1,000 meters.

"The modern method of attack," adds the author, "is worth nothing in a great many cases, notably in the extensive actions engaged in by large units. It may be used against a position which the enemy defends passively, in cases where cover is entirely wanting. Between Metz and Strassburg the German army spreads over 150 kilometers of almost fifteen different routes. On each of them, therefore, almost an army corps will march, which will not be able to choose its ground.

"In the open plains, in front of an enemy firmly established, a decisive action will be avoided as much as possible, even with a superior artillery force, when the action will require the greatest sacrifices. This action could generally be undertaken by a neighboring force at less cost by taking advantage of more favorable ground.

"*It will be the endeavor to engage rapidly at these points with forces superior to those of the enemy, to form thick lines of skirmishers, who will seek to strike the enemy in a hand-to-hand fight, and advantage will be taken of the superiority of fire to throw forward masses.*

"This will be the best means, not to say the only one, of snatching victory. We defy the illusion that we can win without great losses."

Like Lindenau, the author of the above article rises above details. He treats of organizations, of attacks, and fighting fronts. The question is worthy of a moment's attention.

The practice of the maneuvers in which relative order reigns, and where numbers are not the same as in war, makes us familiar with extended fronts. The example of the English and the pretended powerlessness of frontal attacks tend to confirm these foolish practices.

The Germans have not assuredly escaped the danger, but their writers are reacting.

"The extraordinary extension of the English fighting fronts in the second part of the war," says Balk, "would not have been possible in Europe * * *. The bravery of the enemy is a great factor to be considered in extension of front. The depth must naturally be greater as the enemy is stronger.

"In the fight, we read in the *Jahrbucher*, the twenty and some thousand foot soldiers of an army corps crumble quickly; they suffer losses, and segregate themselves into parties covered by accidents of the terrain.

"In 1870 the mean front of an army corps was 2, 3, or 4 kilometers; it has become 5 kilometers against armies not so good as those of the Republic. Existing armies do not permit an extension of as much as 8 or 10 kilometers, as is often done. Intervals can undoubtedly be greater than formerly. Nevertheless *masses* are absolutely necessary, without which no attacks are successful."

From all the quotations just read, one clear idea is observed: The Germans consider that to conquer, *masses* are necessary.

Suitably extended at points of the ground favorable for their action, masses alone will make powerful lines of fire, and will so strengthen these lines, notwithstanding losses suffered, as to secure superiority over the fire of the defense, push forward the attack, make a breach, and take every advantage of any partial success obtained.

Between these zones of powerfully organized attacks, thinner lines can be thrown forward across the exposed zones, unfavorable for the attack and equally unavailable for the defense.

The large units thus attack in *line of masses*, at intervals more or less extended, according to the nature of the terrain, but such that the command can always make its action felt. This point being established, we will return to the discussion of the details of the attack.

At the commencement of 1903, in a work full of good sense, Boguslawski represented in its entirety the study of the practical lessons of the South African war and summed up in a precise manner the directing principles of the infantry fight. After having studied, like Lindenau, the principal battles of the Transvaal, he took particular care to avoid "premature generalizations." "Every change," said he, "must be based on a profound examination of war and its factors, and not on the outside appearance of one fact of war." For him, "the South African war has shown once more the difficulty of the attack on open ground. But this attack is not impossible if the troops and their fire are used judiciously.

"Experiments undertaken have only for their end the finding of the best detailed methods. They in no way modify tactics as a whole."

Here is how he considers these experiments:

Thin lines of skirmishers, he says, are praised, even when giving a dispersion of a group of 10 or 12 men over a front of 100 meters. Such formations are impossible; they would not be able to advance; their fire would be powerless.

It is pretended that the line could be progressively strengthened, that there would be time in the fight for it. This is all wrong. It is frequently necessary to obtain a quick decision. For example: The Saxons on the 18th of August, the second army at Sadowa.

Besides, the successive reenforcement of the line causes a mixing of units and an entire loss of command.

It becomes necessary to deploy at the beginning a sufficiently dense line of skirmishers (150 meters for a company, 400 meters for a battalion, are the maximum limits). They will suffer more losses, perhaps, but they will at the same time inflict more on the enemy. To make rushes at a run in actual war is impossible, where the knapsack is heavy and the men are fatigued. The strength of the groups, the length of the rushes, are things which it is impossible to fix beforehand.

As to replacing commands by gestures or signals, under pretext of not giving warning of the movement, it is absurd. A calm, strong voice will oftentimes have a very great influence on the conduct of the men.

As to the supports, it has not at all been demonstrated that in deploying them as skirmishers their losses are diminished. The fire of the enemy is directed uniformly on the entire firing line, in rear of it the ground is equally under fire.

This deployment of supports behind the firing line is, besides, very dangerous; at the very first opportunity they will open fire on the backs of their comrades. They must be kept in columns of companies; it has never been proved that this is impracticable.

For the assault, Boguslawski praises (the idea is not new) fire on the march, which, he says, gives as good results at short ranges as aimed fire at the longer ones.

The above work has given rise to new controversies. The ink flows in streams from the pen of v. der Boeck, of Caemmerer, and of Scherff. The dispute runs on, but it has become very much localized. It has reduced itself almost to the eternal question: Must it or must it not be a normal formation? Is it right or not to destroy the initiative of the subordinates?

The opposing sides, while irreconcilable on this point, as we have seen, are almost in accord on the general principles of infantry fighting. All recognize:

That decisive results in the fight can only be obtained by the fire of dense lines;

That on open ground this decision must be obtained at 1,000 or 800 meters;

That supports are necessary in rear to stop the gaps and maintain the intensity of the fire;

That the attack on open ground will always demand heavy losses, and decisive results will have to be sought as much as possible on more favorable terrain; but that this attack is not for that reason impracticable, and that it is imprudent to exaggerate its difficulties.

In what concerns the methods to be employed in the advance by rushes, as well as in regard to the formation of the supports, current ideas are very much at sea.

The rushes must be short enough, one side holds, to prevent the enemy from opening an effective fire. The attackers rise by small groups at a given signal; they dash forward 30 meters and fall down at the moment that the bullets begin to rain on them.

But officers of experience reply that this method would cause the men to rise and run forward twenty or thirty times in the decisive zone of fire. They have no reason for thinking so. Those who have made war know that the greatest trouble comes in getting troops from the least cover, and prevailing on them to move forward.

The question of throwing forward small isolated groups need no longer be considered.

It is not without interest to read what one of the German authors wrote on this subject a short time after the war of 1870, at a time when the recollections of the war were not deformed by time. The observation is of a psychological nature. The progress of armament leaves its value intact.

"They wish to prescribe an advance by successive rushes, executed platoon by platoon. But have the real circumstances presented by war been considered?

"Can it be believed that platoons will rush forward in front of a line of riflemen who continue to fire on their flanks?

"Can it be believed that men will march with assurance when they see themselves alone, and hear the bullets of their comrades whistling in their ears?"

What was thought impossible thirty years ago would now be demanded of men less inured to war.

On the subject of supports, the discussion extends from Boguslawski, who demands columns of companies, to the partisans of the new school, who have them deployed as skirmishers. The latter formation has been practiced at the Imperial Maneuvers, but it has retained its experimental character; it was, perhaps, even an act of courtesy for the invited Englishmen.

Listen again to the opinion of the author cited above:

"The support has not only for its object, the supplying of material losses experienced by the skirmish line, but also of strengthening the weakened morale of the men. . . . . If it be supposed that isolated men reinforce the firing line throughout its extent, will it not be the men already engaged who will influence the morale of the new arrivals?"

They believed in the Transvaal, that they had discovered this truth, and saw in it a proof of the uselessness of supports.

In fact, to once more demonstrate that there is nothing new under the sun, let us quote the following lines written twenty years ago by Prince Hohenlohe:

"After the experiences of the campaigns of 1870 and 1871 it was permissible to produce for a certain time on the field of maneuvers and to practically demonstrate new evolutions. Their authors were especially busy in solving the following problem: How is it possible to advance to the attack over a plain swept by the fire of the enemy?

"We saw the strangest formations reappear. The entire field of maneuvers, with a length and breadth of three hundred paces, was covered with files of two men, and consequently it was impossible not to see that they were elevating to the dignity of a system the general *sauve-qui-peut* policy."

Would this not apply to the formations tried a year ago at Templehof, at Döberitz, in the Imperial Maneuvers?

In spite of the theorists who try to demonstrate that one can conquer without great sacrifices, the mass of the army share the opinion of Hohenlohe on these formations *en poussière.*

A German journalist, writing recently, says: "If there is really a Boer tactics it will not suit an army which attacks. Down with Boer tactics."

This journalist might well have spoken the truth.

If we waive the question of opportunity for a normal formation, the extreme opinions are not so far apart, and entire agreement would undoubtedly be secured as to the method of advance of skirmishers and supports, as well as on other points, if the opposing sides were not kept busy in the domain of infantry technique.

But it is with difficulty that some have dared recall that artillery must open the way for the infantry. On the other hand, we have seen Lindenau calculate minutely the time necessary for an ambushed line of infantry to open an effective fire, for a company deployed to rise, run 30 meters, and lie down.

No writer shows the defender obliged, from what appears, to intrench to escape artillery fire, and for quite a time after each salvo to be in no condition to open an effective fire.

At the moment that the assailant shall see the projectiles of his artillery cover with iron and fire the enemy's line, will not the skirmish line be able as formerly—even better than formerly—to advance?

It is to be hoped that the rush will be as long as possible, for the start, as has been proved, will be very difficult.

Can its limits be set?

Does not its fixing correspond only to the conditions of peace when the combatant retains his morale intact, is always ready to instantly open a fire, which theory declares immediately "destructive?"

Will the movement of supports be then more difficult than formerly, when protected by the fire of skirmishers and the artillery? Is their formation very important on the point of vulnerability, and should not one above all things think of keeping them in hand and of their mobility?

Observations made during this unhappy Transvaal campaign are always opposed. But has anybody ever seen there any accord between the action of artillery and of infantry, the two arms of the attacker opposing their efforts to the single arm of the defender?

It is said to be only a moment when the infantry advance forces artillery to increase its range. This moment will be later in arriving than formerly, thanks to the greater precision of material. The distance of 500 meters fixed by artillery regulations, considered as excessive, can be easily reduced one-half.

Will the defender, less inured to war than formerly, more shaken by the terrible power of present weapons, be able to prevent the attacker from crossing this last zone, the so-called zone of death, but the zone of death also for the past 30 years and nevertheless crossed?

It is not ingenious formations, clockwork mechanisms, like those which have been tried, that are necessary, but a more complete union of arms and, as always, the desire to win.

In Germany these points of view have assuredly not escaped the higher authorities, who do not cease to encourage and facilitate by all means possible the working hand in hand of the different arms.

Official opinion, it seems, can be summed up as follows as to the employment of infantry in combat:

The march forward is in file as long as possible; it is reconnoitered by officer's patrols who, furnished with good field-glasses, slip to points favorable for observation.

When the patrols are stopped by something which they can not make out, some units are deployed "carefully and sparingly," over a wide front.

As soon as serious resistance is found, a powerful line of fire is established. Mixture of units is delayed as long as possible, by assigning to each one a small front—150 meters for the company, 400 meters for the battalion as a maximum.

This firing line is established first at the edge of the last cover, up to which they may have come by defiladed roads. Behind the firing line troops will be formed to serve as reserves, sufficiently numerous to give the greatest power to the forward movement.

In the more open zones, firing lines should be thinner, with supports in smaller bodies. On exposed ground the decisive struggle will commence at 1,000 or 800 meters. At this distance, with troops which are well trained in shooting, the attacker should begin to secure superiority of fire.

If the attack is pushed with sufficient force and the desire of winning, success is only a question of time.

Superiority of fire and the forward movement are only realized by a constant combination of infantry and artillery fire.

This can not be done unless masses follow the firing line to fill the gaps caused by the losses.

There can be no victory unless one is resigned beforehand to great losses.

In a word, the "new tactics" is simply regarded in Germany as *a new step forward in a path already old.*

NOTES ON THE ARTILLERY IN THE SOUTH AFRICAN WAR.[a]

By P. **Van Berchem**, Major of Artillery.

Translated from *Revue Militaire Suisse*, January and February, 1903, for the Second Division, General Staff, U. S. Army, by Capt. **William Lassiter**, Artillery Corps.

In its number for July, 1902, the *Revue Militaire Suisse* has given an analysis of an article of the *Revue des Deux-Mondes*, entitled: *Some Teachings of the South African War.* While stating that the conditions under which this war was carried on are of too special a nature to permit positive solutions to be deduced, this article seeks to show that much instruction may be drawn from it; that the fire from rapid-fire guns using smokeless powder has forced the English to abandon their former methods, and that new tactics have been necessitated and improvised. This point of view has received, moreover, an immediate practical confirmation, inasmuch as we read, in the *Chroniques* of Germany, accounts of the new German infantry tactics inspired by that of the Boers.

---

[a] Authorities consulted:

1. Capt. G. Gilbert, *Histoire de la Guerre, Sud Africaine*, Berger-Levrault, Paris, 1902.
2. *The Times History of the War in South Africa*, Vol. II, Sampson Low, Marston & Co., London.
3. *Naval Brigades in the South African War*, Sampson Low, Marston & Co., London.
4. Capt. Holmes Wilson in the United Service Magazine, 1901: *The War; The Future of Our Artillery; The Artillery in Natal, Colenso; The Artillery Duel; Essays on Artillery.*
5. *Notes on Artillery Fire*, by a regimental officer, in the United Service Magazine, 1901.
6. *Betrachtungen über den Krieg in Sud Africa*, Beiheft zum Militär Wochenblatt, 1901, 8th Heft.
7. Roesler, *Material und Leistungen der Feldartillerie in Burenkrieg*, Jahrbücher für die deutsche Armée und Marine, April, 1900.
8. *Die Pompoms*, Neue Militärische Blätter, January, 1901, Berlin.

We seek, then, to draw from the South African war such teachings as it can give on the evolution of tactics consequent upon the improvement in firearms.

These teachings affect especially the infantry, in view of the leading rôle played by the infantry rifle in this war But if the rather secondary rôle played by the artillery prevents us from drawing precise conclusions concerning that arm, the examination of certain facts concerning it, and some opinions which these facts have suggested, do not fail to claim a certain interest.

This examination is the object of the following pages. It does not, however, claim to be complete, for though the publications on the war are already numerous, the principal documents, such as the work prepared for the English general staff by Lieutenant-Colonel Henderson, and the Boer documents. whose publication General Botha proposes, have not yet appeared.

One must not, however, forget the very sensible difference existing between the rapid-fire artillery everywhere under test to-day, and the material employed in this war—a difference which will prevent us from making absolute forecasts concerning the future of artillery.

We will first take a rapid glance at the equipments of the two belligerents, and at their effective strength.

Then we will note the respective forces of artillery present in the principal battles. After having described the method of fighting generally employed by the two adversaries, we will permit two actual witnesses to give their special observations on the artillery: First, Captain Holmes Wilson, of the Royal Field Artillery, who took part in the fights on the Tugela; then, a German officer who fought on the side of the Boers in the Orange Free State. These two witnesses, while telling only of things seen, will not repeat one another too often. They did not belong to the same side, and they have figured on two portions of the theater of war whose terrains were not identical.

Finally, we will quote from Captain Gilbert, who, in his posthumous work, *La Guerre Sud-Africaine*, seeks to draw the lessons of the campaign. This work deserves to be read and meditated upon, and the extracts or résumés which we shall give are intended merely to invite our comrades to study it. They will find there, among other things, a very interesting chapter of conclusions.

The author, enlarging upon his subject, branches out into a discussion of the rôle in war of the new artillery, and takes for that purpose the method adopted by General Langlois, commandant of the Twentieth French Corps, in his book of 1892: *Field Artillery in Cooperation with the Other Arms.* The principle, indeed, indicated by this title will be the one which he will strive to emphasize by the lessons of the campaign.

This article will not extend, then, into a discussion of the points of view expressed. It will limit itself to being objective, and to putting before its readers some facts and opinions furnishing matter for reflection.

I. MATÉRIEL.

Let us take a glance at the material employed on the two sides. We find on the part of the English:

The *field piece of 76.2 mm.* (3 in.) of 1884, improved in 1895 at the time of the introduction of smokeless powder. From the point of view of ballistics, we may consider it as closely analogous to the German piece of 88 mm., or the French piece of 80 mm., or even to our present Swiss piece. Only shrapnel were provided for use with it. These shrapnel contained 200 balls, and had combination fuses adjustable up to 3,650 meters. The piece fired from 1 to 2 shots per minute, with an initial velocity of 471 meters.

A recent arrangement of Colonel Clark has permitted the partial suppression of the recoil, and the transformation of the piece into one with accelerated fire capable of 5 shots per minute.

The *piece of the horse batteries* of the same caliber, very light; furnished with shrapnel, also very light, interchangeable with those of the field piece; this interchangeability did did not exist for the charges.

The *mountain gun*, which fired a seven-pound shell, of little effectiveness.

The *field howitzer of 12.7 cm.* (5 in.), heavy for a field piece, provided with shrapnel and lyddite shell, with a maximum range of 4,900 yards.

The *siege pieces*, principally of 15.2 cm., but some of 12.5 cm. and of 10 cm.

The *navy pieces*, some fired from platforms, others from carriages improvised at the last moment for their transport. They were of calibers 15.2 cm., 12 cm., and 7.6 cm.

Finally, *some Maxim machine guns*, distributed by sections of two pieces each to brigades of infantry and cavalry, and to battalions of mounted infantry. At first these were machine guns using small-arm ammunition.

Later, when the English had seen the moral effect produced by the Boer pompoms of 37 mm., they too procured some of these machine guns of large caliber. They reached the army just before the surrender of Paardeburg.

The lyddite shell of the howitzer weighs 25 kg. (50 lbs.) and its explosive charge 4.5 kg. The cone of dispersion is 180°, which, with accurate fire, permits reaching behind cover; but the effect is inconsiderable against shields, due to the smallness of the fragments.

As for the number of guns in use by the English, this has varied with the different epochs, always increasing with the successive mobilizations caused by the first checks in Natal and on the Modder.

Here are the totals at different dates:

For the regular army:

October 7, 1899. Total on the line covering the mobilization, 66 guns.

December 10, 1899. Reenforcements of three divisions and one mountain battery have arrived—186 guns, of which 18 are howitzers and 20 machine guns.

January 1, 1900. A fifth division has arrived and a group of horse artillery—222 guns, of which 18 are howitzers and 29 machine guns.

March 1, 1900. Reenforcements: Sixth and seventh divisions, and four groups of horse artillery, of which one is of howitzers—338 guns, of which 36 are howitzers and 65 machine guns.

April 8, 1900. Reenforcements: Eighth division, 356 guns, of which 36 are howitzers and 81 machine guns.

In taking account of volunteers and colonials, the totals become 407 guns, of which 36 are howitzers and 144 machine guns.

It is proper to add the siege train, debarked between the 15th and 25th of December, and composed of 30 howitzers; then the detachments from the navy, whose total in guns is not given—the first three, at Ladysmith, on the Modder and the Tugela, comprised about 30 pieces.

Let us recall that the total effective strength dispatched to Africa amounted, on the 10th of April, 1900, to 200,000 soldiers and 4,000 sailors, and at the end of the campaign to 448,000 men.

On the side of the Boers artillery troops formed the only permanent nucleus, both in the Transvaal and the Orange Free State. The effective strength was about 800 men, with some reserves. Data concerning the matériel at their disposal has greatly varied. According to a report of the War Office of February 11 it was estimated at 220 or 230 guns, but there have been included in this estimate orders given and not filled, and, according to the *Revue Militaire des Armées Étrangères* (April, 1901), the matériel comprised only the following pieces:

Transvaal:
- 4 siege guns, 155 mm., Creuzot.
- 6 field guns, 75 mm., Creuzot, 1895.
- 8 field guns, 75 mm., Krupp, 1896.
- 4 howitzers, 12 cm., Krupp.
- 3 field guns, 75 mm., Maxim-Nordenfelt.
- 1 field gun, 75 mm., Skoda.
- 8 machine guns, 37 mm., Maxim-Nordenfelt.
- 13 machine guns using infantry ammunition.

Orange Free State:
- 14 field guns, 75 mm., Krupp, 1892.
- 6 field guns, Armstrong, muzzle-loading.
- 3 mountain guns, Armstrong.
- 1 machine gun, 37 mm., Krupp.
- 3 machine guns using infantry ammunition.

If these figures are correct, we have, then, 8 pieces of large caliber, 38 field pieces, 3 mountain, 9 pompoms, and 16 machine guns using infantry ammunition.

The Krupp piece was analogous to the present German material, with accelerated fire. That of Creuzot approached the French rapid-fire gun without having its accuracy and not possessing its shields. Both, without being entirely up to date, were superior to the English pieces in range and rapidity of fire. The Krupp material, while inferior to that of Creuzot from the point of view of ballistics, seems to have been preferred by the Boers on account of the superior quality of its ammunition. The field pieces had both shell and shrapnel. The Maxim-Nordenfelt could throw 50 to 60 shell, of from 1 to 2 pounds each, per minute, and carried shields. A part of the ammunition had fixed metallic cases. The Boers, like the English, used smokeless powder.

The effective strength of the army at the beginning of the campaign has been estimated at 50,000 men; but in taking account of all the men who left the commandos to return home the present effective never passed 36,000 to 38,000 men. This would be, then, the strength of an army corps, with a proportion of artillery half that of an army corps of the great countries of Europe, and spread, moreover, over this vast theater of war.

II. STRENGTH OF ARTILLERY IN THE VARIOUS BATTLES.

In referring to the historical works on the war for the complete description of the rôle played by the artillery in the principal fights, it is worth the trouble to go over the lists of each and note the number of guns which are found available on either side. If this is easy with respect to the English, the same information concerning their adversaries is not at all precise or reliable, nor do the reports always agree.

The army of Joubert on entering Natal comprised 16 field pieces, besides some pieces of varied type, among which the celebrated Long Tom figured. Sir G. White opposed him with 6 field batteries, 1 mountain battery, and 1 colonial battery from Natal, in all 48 pieces. Note the following details: At the first encounter of Glencoe, October 20, the Boers, after having surprised the English camp by a fire of artillery, abandoned Talana Hill before the English attack. They had only 4 guns and 2 Maxims against 18 English pieces. The next day, October 21, at Elandslaagte, we find 2 pieces pitted against the Natal battery at first, and then against 12 additional field pieces. At the affair of Rietfontein, October 24, the only Boer piece which opened fire against the English column in march withdrew afterward before 12 pieces. Impressed from the first encounter with the fact that the range of the Boer artillery surpassed that of the English artillery, General White telegraphed at once for navy guns.

The first detachment of these arrived at Ladysmith October 30, just in time to take part in the battle which preceded the investment of the place. On this day Joubert probably put in action all the artillery he possessed against the 7 English batteries. The latter energetically defended the retreat, supported by the 3 navy guns, which debarked from the train to open fire. One of these was overturned by a projectile from Long Tom; but the others, thanks to the effect of their lyddite shells, a novelty for their adversaries, did not fail to gain the advantage. On the same day the mountain battery, as well as the detachment of Nicholson's Nek, fell into the hands of commandos unprovided with artillery.

The army of Cronje, on the Modder, had 10 guns. Lord Methuen while attacking him had his army successively reinforced.

In the fight of the advanced line at Belmont, November 23, the 2 Krupp pieces and the pompoms of Major Albrecht which, the evening before, had retired behind kopjes before an English reconnoissance, did not take part in the struggle. On the part of the attack there were 2 batteries and 4 navy 12-pounders. On the 25th, at Graspan, 6 Krupp pieces, 1 Nordenfelt, and 1 Maxim supported the contest for 3 hours against the same 16 English pieces.

On the 28th, at Modder River, Major Albrecht had disposed 5 pieces in the center, 2 on the right wing, 2 on the left, with a Maxim, and had them all sheltered behind strong epaulements. He had, besides, a Hotchkiss, intended to be posted according to the course of the fight. Lord Methuen, reinforced by a battery, had 22 pieces.

When a little later he sought, on the 11th of December, to force the last point of support of Cronje at Magersfontein, he had 3 field batteries, 1 horse battery, 1 battery of howitzers, and 5 navy guns, of which one was of 15-cm. caliber. In this battle, commenced at night by the attack of the Scotch brigade under General Wauchope, the Boer artillery, apart from the pompoms, did not make itself heard until 4 o'clock in the afternoon. At this moment the sudden opening of its fire determined the retreat of the Scotch, who had remained in place after their check of the morning.

The Boer artillery seems to have played an even slighter rôle in Orange than in Natal. We have proof that General

Cronje had very little artillery; for after having left 1 piece at Magersfontein, at the time of his retreat on Paardeberg, he gave up, on his surrender, only 4 Krupp field pieces and 2 pompoms. He had, then, no heavy calibers and scarcely could he use his 4 guns when he found himself exposed in his camp at Paardeberg to the fire of more than 50 pieces, among which were field howitzers and navy guns.

Of their 4 heavy 15-cm. pieces, the Boers had 1 before Mafeking, 1 before Kimberly, and 2 before Ladysmith. If we add a few pieces before these two places, and a few others with the troops in the south of Orange, we arrive at about the total effective strength indicated above.

In the second phase of the campaign in Natal, General Joubert distributed his artillery between the defense of the Tugela and the siege of Ladysmith. A map of the siege, in *Naval Brigades in the South African War*, indicates before this place 10 emplacements for siege pieces, besides 5 for field pieces. This figure must be a maximum which has scarcely been reached at any one time.

General White had received, as we have seen, some navy guns to reinforce his seven batteries. There were two 15-cm. pieces mounted on wooden platforms; four 12-pounders, of which three were mounted on Scott improvised carriages, the other being a landing gun; finally, 4 Maxims, of which three were on carriages and one on a tripod. It must be remarked, however, that this superiority was only relative, in view of the limited ammunition supply which forced the besieged to a great economy, especially toward the end of the investment. The two 15-cm., for example, had only 300 rounds each.

In the combats on the Tugela we find at the beginning, at Colenso, December 15, 5 field batteries and 12 pieces of heavy caliber (2 of 15 cm. and the others 12-pounders) against 9 Boer pieces (5 only, according to Gilbert) and some pom-poms. Afterwards, at Venters Spruit and Spionkop at the end of January, at Vaal Krantz and Pieter's Hill in February, the English artillery was further increased. The Boers, to counterbalance their inferiority, detached, on occasion, pieces from the siege of Ladysmith. Thus at Vaal Krantz we see a Long Tom playing an important part. They also called Major Albrecht from the Modder to Natal with half of his artillery. This remarkable utilization of interior lines is established by a letter of Major Albrecht's.[a] This assistance was only temporary. Thus the disproportion of forces went on increasing, and when the English forced the Tugela at the moment when the Boers commenced the retreat and the raising of the siege of Ladysmith—both occasioned by the surrender of Cronje at Paardeberg—we see the attack on Hilongwane Hill prepared by the fire of 64 pieces against only 3.

III. METHODS OF COMBAT OF THE BELLIGERENTS.

In order the better to understand the manner in which the material was utilized, it is useful to bear in mind the nature of the organization to which it pertained. Here is the description of the method of action of the Boers, given by Captain Gilbert and condensed in a few words:

"After having taken the initiative and the strategic offensive in their invasion of Natal, they limited themselves to a purely passive tactical defensive.

"Their disposition for battle was always linear, without organization in depth—save sometimes an advance line—and without reserves. So, to reenforce a point or extend the line, they had no other resource than to withdraw men from the part of the line least menaced—a proceeding rendered possible by the mobility of the troops, which were always mounted. Their victories were always sterile, because they contented themselves with parrying without thrusting, because they did not know how to pursue a beaten enemy. These tactics, which check the enemy but do not crush him, were almost imposed upon them by the lack of organization (they know only the commando), by the lack of discipline, by the very slender effective strength, finally, with which they opposed the English."

A letter from a companion of Villebois-Mareuil in the *Journal des Debats* attributes a great part of the offensive weakness of the Boers to the election of officers by their men, a principle which must have often paralyzed the initiative of the chiefs: "It is well enough as long as the electors and the elected are in a communion of ideas, but when the elected thinks to execute a plan which is not agreeable to those under its jurisdiction, it approaches the precipice of being cast aside and replaced by a member of the majority."

---

[a] See *Journal de Geneve*, February 11, 1900.

The Boers, convinced by experience, renounced later this system, and decreed, September 14, 1900, a true military organization, in which the generals and commandants were named by the commander in chief, the field cornets by the commandants, the corporals by the field cornets. But this organization was only able to figure in the guerrilla warfare, with which we shall not occupy ourselves here.

The German officer, to whose testimony we shall recur later, characterizes thus the Boer method of fighting: "They had in general for a principle to seek to envelop the adversary, or at least to avoid being themselves enveloped; that led them to a considerable extension, and consequently to a very weak occupation of their own lines. The envelopment of the adversary is advantageous, for this mode of fighting favors better than any other the effect of one's own fire by concentrating it, and nuetralizes at the same time the enemy's fire by forcing it to be scattered. Often they have committed the fault of not utilizing the results obtained and pushing forward while continuing the fire; but it would be an error to impute their passivity to extended formations alone. Good commandos, led by energetic chiefs, have often proved the contrary."

We will understand, then, without difficulty that with their small number of pieces, their lack of organization, and their very extended fronts, the Boers have employed their artillery only by isolated pieces. These general conditions have prevented them from realizing the unity of action desirable between artillery and infantry.

On the part of the English, without being a party to the same parceling of forces, we find that the superior unit of artillery does not exceed the group of three batteries attached to each division of eight battalions. There is lacking, then, a fixed organization of command for the direction of the fire of great masses. Captain Gilbert thus describes the English method: "To start with, their plan of engagement is purely linear like that of the defense. No reconnoissances, no advance guard action; and in place of utilizing the passivity of the enemy for a turning attack or distributing their troops with a view to carrying some decisive point, they deploy prematurely their forces before the whole front. It is scarcely in such a method of conducting battle that one will find teachings for artillery."

IV. OBSERVATIONS OF CAPT. HOLMES WILSON.

One of the first facts which struck Captain Holmes Wilson, as well as the whole English army, from the time of the first encounters in Natal, was the superiority of the Boer artillery material over the English material. If this superiority has not played a more important rôle it may be attributed to the small number of cases in which the Boers could act by concentration of fire upon a single point for a definite time, to the defective quality of their ammunition, and finally to the too restricted number of their pieces.

This superiority has first of all affirmed itself by a greater range. The English field artillery found itself exposed more than once without being able to reply, not only to the fire of pieces of heavy caliber, but even to that of simple fieldpieces. Examples do not lack. At Spionkop the deficiency of range prevented 40 English pieces from supporting by their fire a decimated infantry. Likewise at the demonstration of the 24th of January before Breakfontein, immediately before the attack on Vaal Krantz, 6 field batteries suffered in the open the fire of an enemy out of reach. Two days later, when the Long Tom appeared at Dornkloof, the inconvenience of the deficiency of range becomes still more sensible; here it is the field howitzers of 12.7 cm. which are not able to reply. The Long Tom was posted on a high hill and completely under cover; it was especially necessary to resort to the curved trajectories of these pieces to have a chance of hitting him. Mounted on a disappearing carriage the duration of his appearance when he fired was very short; the projectiles of the heavy navy pieces·whose range was alone sufficient, owing to the great time of flight for the distance, always arrived after his disappearance, and, with their angle of fall, struck the parapet or passed over without ever being able to reach behind the shelter.

The case of the battle of Mooi River is still more characteristic on account of the moral effect produced. There, the Boers utilized the great range of their artillery to surprise their adversary, as they had already done at Glencoe. After the investment of Ladysmith they had pushed a strong reconnoissance to the south of the Tugela; one of their detachments, with one or two pieces, surprised at Mooi River the camp of all arms of General Barton, and at 4,500 yards threw shells into his tents, somewhat as the Prussians did at Beaumont in 1870. An English officer present at this affair, after having described the very uncomfortable effect which this surprise had upon those who suffered it, adds: "Then our battery dashed at a gallop out of camp, and we said to ourselves: 'Now the Boers are going to see that they have gotten themselves into a wasp nest,' and we waited impatiently for what was going to happen. The battery opened its fire; that of the enemy was turned against it. No great harm was done the battery; but what was our surprise to see our 6 pieces obliged to stop firing because they were outclassed in range. As the ground, all cut up in ravines, rose rapidly beyond, they could not advance. Can one be astonished that our beautiful confidence was somewhat shattered after having seen 500 of the enemy bombard with impunity a camp of 3,000 men at midday?"

Two objections may be made against the fire at long distances. The first is this: The entirely exceptional transparency of the air in South Africa which favored long-distance firing will not be found elsewhere. This is evident for England. However, there are other countries where the conditions of visibility will also be very favorable: Egypt, the East, Greece, where in the last campaign fire was delivered at 7,000 meters, while observing perfectly the shots. The second is more serious: The remaining velocity of the shrapnel balls at great distances is insufficient to produce the necessary effect. This objection is supported by facts observed in the war. Thus apropos of the 6 batteries which we have just seen exposed to the enemy's fire before Breakfontein, Capt. Holmes Wilson relates how, after having fired 2 hours without reply, they were suddenly subjected to a fire of artillery.

"When they saw projectiles bursting over them without being able to reply, the troops were seized with dismay, asking themselves if they were going to take part in a repetition of the Colenso disaster; but when the smoke had blown away, it was found that there were no casualties. Long range shrapnel fire of fieldpieces had just shown itself entirely inefficacious."

The superiority of the Boer material has further shown itself by its greater rapidity of fire. Our witness has seen at Breakfontein 3 Boer pieces hurl at 6 English batteries more projectiles than 6 English pieces could have thrown with their most rapid fire. He adds, that the same day the slowness of the English fire permitted a Boer piece to be withdrawn and a pom pom to be advanced without being disturbed. These are brief opportunities; they often present themselves, and it is necessary to be able to take advantage of them. The author believes, then, for such cases, in the great superiority of a battery of 4 rapid-fire pieces over the English battery of 6 pieces.

Let us pass now to the utilization of shelters and of natural cover. The Boers made such a skillful and constant use of this factor that we may attribute to it a rôle of the first order in the campaign. The long halt of the army of Sir R. Buller on the Tugela, is it not principally due to the art displayed by the adversary in remaining completely invisible?

The check to the attack of Lord Methuen at Magersfontein, is it not due to the same cause? On the other hand, is it not because they did not know how to employ this factor that the English were driven from Spionkop, and that they saw the war prolonged for so long a time? The author does not hesitate to find in this the secret which permitted an adversary, incapable of resisting a month in the open, to keep the field for years; and, especially, which permitted his artillery, so inferior in numbers, to keep from being annihilated. The disposition of his artillery by isolated pieces, so open to criticism from many points of view, has had this advantage, to permit of their being concealed very much better.

So one of the principal tasks of the English artillery has been to discover the emplacements of the enemy's guns. It was not rare to see the other arms come to its assistance for this purpose. If one wishes to determine the different places from which at variable intervals bluish flashes are going to appear—which one can not foretell in advance—it is necessary that a large portion of the terrain be constantly watched, and for that one pair of eyes is not sufficient; a very great number are needed.

Seeking cover, everywhere and always, has been the first principle of tactics of the Boers. Two circumstances have permitted its excellent application—long-range guns and, especially, absence of smoke. What are we to think of the value of this principle? If it is dangerous to be always having recourse to it, it is evident that wherever it can be applied it will prolong the duration of the struggle. Up to that time the English artillery, exercising and maneuvering always in the open, had neglected it, but it was not forgotten elsewhere. Thus the German Regulations say: "It is always desirable to protect oneself against the enemy's fire by throwing up works as soon as there is time, even in an offensive action." And again: "Any kind of work is good if it serves to render more difficult the enemy's observation."

So the author asks what would happen to the English artillery if it found itself opposed to a Prussian artillery having recourse to cover, unless it intends to do likewise.

At Colenso all the Boer guns were sheltered and most of them invisible. At Spionkop not a single one could be distinguished. At Vaal Krantz, as we have seen, the only one which was perceived, the Long Tom, was so well protected that nothing could be done against it. At Pieter's Hill, all were under cover and invisible. Formerly it was thought that the first gage of success was to accomplish the regulation of fire first. This first gage to-day might well be the taking shelter. If artillery, in taking a position to the front, falls under the fire of invisible batteries, which of the two sides will have the upper hand? The answer does not appear to be in doubt. So the author concludes from this that a delay in opening fire, in order to gain the necessary time to prepare shelter, will be almost always advantageous.

Another question: What is the effect of artillery on shelters and on the troops behind shelters? On the Tugela, where the Boers constructed many works, the effect of fire of field pieces, like that of the heavy calibers, field howitzers, or 15 cm. navy guns, was nil. One might readily foresee very slender results after experience on the practice ground; but this appears to have been a revelation for the English artillery, who, according to the author, had never previously practiced firing at targets under cover.

How is it that this effect has been nearly nil in reality? For the works, the damages were rapidly repaired at night; as for the men, under the fire of artillery, they remained hidden. As soon as the infantry of the attack approached and the bombardment slackened, they lined the trenches and decimated their adversary. To the question, "What will artillery do if its fire is so ineffective against shelters?" the author answers, "The occasions for using shrapnel will be much more rare; we must turn to the study of another projectile and have recourse to heavy calibers."

We will see Captain Gilbert treating this question in a more general manner and giving to it another answer, which he considers one of the principal lessons of the war. So we shall take up this point at greater length at the end of this article.

With regard to mobility, Capt. Holmes Wilson states that the navy guns and the field howitzers have shown themselves sufficiently endowed with this quality, even in a country devoid of roads. He sets forth the importance of this factor for heavy artillery which must follow the army. And is it not heavy artillery which, in a terrain like that of the Tugela, has been obliged to open the combat? However paradoxical it may appear, heavy artillery then must be able to open fire first and cover the advance of the other arms. With a field artillery provided only with shrapnel and not able to fire at great distances, the commander of an army will not be able to attempt the least attack before the arrival of his heavy artillery. In this regard he remarks that we will return to the idea, abandoned in 1870, of keeping some artillery in reserve. For what good will it do to push guns to the front at the beginning of an action, only to expose them to a fire to which they can not reply, as happened on the Tugela? If heavy pieces are mobile enough to open the fight, must not field artillery be reserved until its fire can be utilized in concentrating it on the decisive point of attack. We will find again this return to the idea of reserve artillery in the conclusions of Captain Gilbert, but in a much larger sense indeed. In any case the frequent employment of heavy pieces in Africa opens new horizons.

Our observer takes up also the much discussed question of the artillery duel. The theorists, he says, have attributed to it a predominant and decisive rôle in the fight. It is on the favorable issue of this duel that they make depend the possibility of passing to the attack or the counter attack of infantry. From it they expect the success of the day. They have for-target was and distributed it over a great surface. To a few shots well regulated succeeded a great number too short or much too long, and that even in cases when the Boer artillery was not well masked. This poor fire action must arise from one of the following causes: Absence of exact determination of the emplacement of the target, poor observation, poor action of the fuses, or defective service. Perhaps field glasses of insufficient power may have counted for something. The importance of the quality of the latter has been especially emphasized.

How did the English shrapnel behave? A part of its balls remained in the envelope after the burst. The angle of dispersion of the sheaf was so small that the width of the dangerous space did not exceed 4 to 5 meters. Under these conditions the number of hits on lines of skirmishers, not very dense, could not be very great. The dangerous space scarcely extended much more in depth; at 80 meters from the point of burst, wounds were rarely serious.

"The Maxim-Nordenfelts made a remarkable showing; even beyond 3,000 meters some of them sustained the struggle against 3, 4, and even 6 field pieces. At the battle of Boshrand I myself fought with one of these pieces—well covered, it is true—during a whole day against 4 English pieces. Some of the latter were indeed reduced temporarily to silence, without our having suffered the least damage. Against cavalry they showed themselves superior to every other piece. At Thabaucheu two regiments of lancers were thrown in confusion in a very short time by 2 Maxim-Nordenfelts. The uninterrupted series of points of burst on the ground permits readily following up a rapidly moving target; which can not be done by a field piece using shrapnel and a much less rapid fire. I have gained the impression that the Maxim-Nordenfelt is a formidable weapon."

This opinion is, however, strongly controverted. I refer readers who may be interested to an article in the *Militärische Blatter*. It recites some opinions favorable to this arm, and others, more numerous, of an unfavorable nature.

Whatever may be the value of this arm, it has interested our observer from another point of view, that of its steel shields. This was the only piece which was furnished with them. He considers their advantage so great that he desires their introduction in Germany. They afforded good protection against shrapnel and musket balls, and permitted a better and more tranquil service. The shield has two inconveniences: It increases the weight by 50 to 60 kg.; it renders the position more visible. The author does not hesitate to consider these disadvantages inferior to the advantages which it assures. Moreover, by choosing a suitable color for the shields their visibility will be greatly diminished.

The English had no shields. Capt. Holmes Wilson has not expressed an opinion concerning them. He limits himself to a questioning and rather doubtful attitude. He cites an English captain who carried sacks with him and filled them with sand at the moment of taking a position, to afford a protection in front of his pieces.

After these observations on the materiel, let us turn to those of our observer on its employment. In estimating the effect of the English fire he has been struck with its great superiority when it was concentrated and not simply frontal. The advantage of obtaining cross fire is so great that one must neglect nothing to secure the benefits of it. It may be attained much better by disposing the artillery in groups well spaced, rather than massing it in a single place, from which it can only fire in one direction. We need not renounce the advantage of this disposition permitting concentration of fire, even if it is prejudicial to unity of direction.

Here is an example: In the battle of Donkeshock an English brigade with some batteries deployed on a plateau 4,000 meters wide by 6,000 meters deep, about 3,000 to 3,500 meters from the Boers, who had placed 7 pieces on one front. Success seemed to be favoring the attack; but the aspect changed when 4 Boer pieces took a position on the flank. The lines of English skirmishers and their reserves began to waver under the cross fire, and their forward movement was suspended. The artillery was obliged to move to the rear, soon followed by the infantry, which executed the movement while suffering sensible losses. A counter attack at this moment would have had great success. The fight took place at such ranges that the infantry rifle did not play a great part; the scene shifted as soon as the artillery commenced to act in two groups with cross fire. If it is often possible to advance while protecting ourselves from one direction, it is rare that one can do so protected from two directions at the same time; this is why a cross fire is so efficacious.

Against lines of skirmishers protected by works the English often employed the lyddite shells from their navy guns or field howitzers. These shells all had percussion fuses. To obtain a favorable effect it was necessary to maintain an accurate fire and to spend, besides, a large quantity of ammunition on a single point. We have already seen how little the English realized these conditions, which explains the small effect produced by this kind of fire. Moreover, even on bursting near by, these projectiles did not always do harm. The author saw men whose clothing was ignited by lyddite come out of the affair with light skin burns. He saw one single shell produce a frightful effect by bursting in the midst of a crowded group of horses and their drivers.

The English guns did less harm to the Boer infantry than to the artillery, because the cannoneers of the latter could take shelter less well individually. At the sight of each hostile gun fire the men stooped down, only to rise again for each lull. "It is certain that our losses would have been more considerable if we had seen less well the hostile gun fires, because we would have been less able to avoid them." This observation is interesting; it shows how the use of cover gives, besides the advantage of diminishing our own losses, that of increasing the loss of the adversary by preventing him from sheltering himself at each gun fire.

We can not follow the author in his interesting observations on the tactics of infantry; that would be going beyond the limits of this article. We shall limit ourselves to citing certain remarks relating to common action of the two sister arms.

"It may happen to the infantry to be obliged to attack under a fire of infantry and artillery, without being itself supported by its own artillery, and of being able readily to carry off the victory. But for that purpose it must fire and take cover from the beginning; this is the indispensable rule for both arms, especially the infantry, and before which the necessary time and space for its application become factors of an entirely secondary importance."

" However efficacious shrapnel may be against objects in the open, all that it can do against objects under cover is to prevent them from showing themselves in order to fire, and thus facilitate the advance of the infantry. It ought to sustain the latter up to within a very short distance of the enemy, for the last approach of 100 meters may still suffice for a defender even very inferior in numbers, but remaining intact, to decimate the attack by the fire of its rifles. To cover this last distance, the infantry will have to count only on itself.

"This was not the English proceeding; in the infantry attack, the artillery ceased its fire much too quickly. On the contrary, when the Boers pushed forward, their artillery supported them by fire, even up to 150 meters of the enemy. The shrapnel burst over our heads without touching us. I believe that we would have preferred even to receive some wounds from that source rather than do without their support."

"One learns readily enough to find shelter in the terrain from small-arm fire, but with much greater difficulty from shrapnel fire. I remain convinced that a frontal attack in the open is as impossible against artillery as it is against infantry. Even at great distances, an advance of a few hundred meters under shrapnel fire suffices to decimate an organization or force it to retire. Here is the method the Boer infantry followed when it advanced under artillery fire: As soon as a projectile burst at a fair distance in front of a group, the latter ran immediately to the front to get out of the dangerous zone."

These are, finally, the conclusions of the author:

"For the future battles of a European war, the South African war gives no definite lessons. The numbers on one side, the matériel and its utilization on the other were insufficient. Since, in many cases, the English, with a triple or quadruple superiority, have had great difficulty in silencing the hostile artillery, we may deduce that in the case of two artilleries of nearly equal strength, one will have much difficulty in gaining a complete ascendancy over the other."

The true lesson of the campaign for artillery is the following: It must support the attack of the infantry by its fire, but it must not advance in the open under the enemy's fire.

VI. OBSERVATIONS OF CAPTAIN GILBERT.

In his conclusions, Captain Gilbert begins by pointing out the danger of premature generalizations. In basing conclusions on certain facts of this war, we risk committing great errors. It is easy to produce examples of this. In a discussion in the French Senate on the abandonment of certain fortresses, the conclusion has been ventured, based on the resistance of Ladysmith, Mafeking, and Kimberly, of the failure of the most modern artillery against entrenched camps of a certain importance. Yet, against these three fortified places, of which two had perimeters of 20 kilometers, the attack utilized for heavy calibers only four pieces of 15 centimeters. Can one properly condemn a matériel when the task imposed upon it is entirely disproportionate to its effective strength?

Another example, which we must reproduce textually: "After the checks on the Tugela and the Modder there were writers who condemned absolutely all frontal attacks, proclaiming as invincible the defensive sustained by skillful riflemen, and concluding that, though leading to no decision, the defensive was in future the only tactics possible.

"The English, in spite of their enormous numerical superiority, had seen their assaults pushed back. This was enough to pronounce a judgment without appeal; the inquiry was not even made if the assaults were delivered in accordance with proper methods.

"And as the English artillery in particular was ten times stronger than that of the federals, as it had done all the firing in the beginning, had continued to do so, and lavished tons of ammunition without obtaining appreciable results, people were led to declare the futility of that great offensive agent, the gun and its shrapnel. They considered as henceforth inefficacious the preparation of the attack by guns, which amounts almost to denying all chances of success to the attack.

"The truth is that the English artillery, well served, well horsed, excellently maneuvered, was employed according to the most detestable methods. Results were expected from it which it has never given, and hence its failure should not surprise us.

"They caressed at first that chimera of reconnoissance by artillery fire, which was hatched across the Rhine, but of which our neighbors have promptly disabused themselves.

"In the plans of engagements of Sir R. Buller and Lord Methuen, we have already pointed out the complete absence of advance-guard action. The hostile position was before them with all its mysteries. They searched it with their shells, hoping to get some maladroit reply which would have disclosed the dispositions of the defender. The latter, better advised, remained quietly under cover, and the powder was burned in pure waste.

"None the less they passed on to the bombardment of these undetermined positions. The artillery duel being suppressed, and for cause, they proceeded to the preparation of the final attack. But what was their idea of this preparation, and the relation of these two phases? For 24 hours at Vaal Krantz; for 36 hours at Magersfontein, they hurled against a line of kopjes the fire of 50 or 100 guns; they emptied their caissons. Then silence fell over the whole line; the artillery ceased its fire, and infantry, cavalry, artillery threw themselves forward offensively. There was complete disjunction between these two acts, the preparation and the assault; sometimes there was even quite a delay between the two.

"During the storm of this pseudo-preparation the Boers kept themselves in their trenches; they did not have to raise their heads above their sand bags to watch over and fire upon a terrain on which the enemy had not arrived. The cannonade having ended, at the moment when the English columns, much too dense, appeared offensively, the defenders lined the parapets and fired on them as at target practice. Up to that time they had had but insignificant losses.

"It is, as a matter of fact, an elementary notion that field artillery acts only against unmasked objects. To oblige the defender to unmask himself, the infantry must threaten him from the outset. The artillery combines its *rafales* with the rushes of the infantry; it must, as General Langlois[a] has fully shown, continue its fire over their heads up to within 300 meters of the objective. That is the cooperation of the three arms; it is the fruitful law which alone enables the offensive gradually to lower the mask of the defender in order to strike him in the face.

---

[a] L'Artillerie de Campagne en liason avec les autres armes, by Colonel Langlois, Librarie Baudoin, Paris, 1892.

"This law was disregarded by the English, as it was by the Russians at Plevna. In both cases the isolated cannonade remained sterile. Must we deduce from this the inefficiency of artillery?"

On reading these lines we can not avoid recurring to the description the author has given beforehand of the battle of Colenso. It deserves to be read. It is the most characteristic example of the methods of the beginning of the campaign. We learn how, in the attack without definite plan. each brigade of infantry, each group of artillery, marched in so many distinct columns, operating each on its own account, and what result is arrived at, with a disposition which does not assure the cooperation of the several arms. We learn how the artillery of Colonel Long, 2 batteries and 6 navy guns, advanced alone in front of a brigade of infantry to within 600 meters of the underbrush which bordered the Tugela and 1,100 meters of Fort Wylie, which it had for its objective. and how, at this distance—much too close—it was reduced to silence; how, finally, by this isolated action and the subsequent lack of sufficient action on the part of the infantry, this battle terminated with the loss of the guns.

But let us return to Captain Gilbert's chapter of conclusions. After having shown the violation by the English of the law stated by General Langois, the author shows how this law has been established in the work already cited and how its rôle is destined to be still further enlarged with rapid-fire artillery. Without being able to follow this whole study, let us indicate the logical sequence of ideas. Making first a comparative study of the materials which have succeeded one another since 1870, the general finally advances the following propositions concerning the employment of rapid-fire field artillery:

1. To open fire at a decisive range (3,000 meters).
2. To fire with all rapidity.
3. In order to avoid this overwhelming fire, to take advantage of cover.
4. For the same reason, to decline priority in opening fire.
5. To put in line the least number of guns which will surely produce the desired effect, both so as to display as little of our

strength as possible and to secure afterwards for our artillery the most advantageous situation.

This is the principle of *economy of forces* which the new French regulations applies in creating the term and the notion of *batteries in position of observation* (*batteries en position de surveillance*).

This last rule implies a change from the principles of 1870. We no longer seek to push into action at the moment when the mass of batteries of the main body has joined the batteries of the advance guard; we wait until the enemy, unmasking superior forces, brings on the general artillery action.

When, in the time of Napoleon, with an effective range of 700 to 800 meters, fire was opened at 500 meters, every battery engaged was a battery expended. Hence the necessity of batteries kept in reserve. With the artillery of 1866 and of 1870 and effective ranges of 2,500 meters, results, at this distance beyond the range of small arms, still left the batteries at the general's disposal. The artillery remained available; we had the privilege of employing all of it from the beginning. With artillery provided with shrapnel and opening fire at 3,000 meters, batteries which have the worst of it in a struggle in the open against hostile batteries will be immobilized by a small number of pieces and will not be able to limber up. Artillery with shrapnel ceases then to remain available, once engaged. General Langlois was alone in discerning this fact in 1892. Hence he has only to emphasize his views when dealing with rapid-fire artillery. Thus:

In a fight between two batteries of the old bronze material, if one succeeded first in inclosing the other in a rectangle of 100 by 250 meters deep, 10 or 15 minutes of distributed and sustained fire sufficed to put out of action half of the unprotected personnel. But with the rapid-fire gun all the personnel of the gun detachment can find shelter behind the shields and may suspend the action. As the adversary can not fire indefinitely, the side which had been worsted may profit by a lull to reopen its fire. The initial struggle from cover to cover leads then, at most, to the silencing momentarily of one of the two adversaries. The artillery duel will no longer afford a definite solution, as it did between batteries using shrapnel without shields. It leads to a delaying action.

But if the infantry takes a hand, a new factor presents itself—the artillery will be obliged to advance to the military crest. Unmasked, the batteries will be then completely immobilized or destroyed. So, skill will consist in forcing the adversary to unmask himself, while remaining sheltered yourself. To obtain this result it will be necessary to push your infantry to the front. It is by the combined and intimately associated working of the two arms that one is absolved from useless and resultless cannonades.

This is the principle of the cooperation of the three arms. unheeded by the English. The artillery must by its fire force the adversary to shelter himself, in order to facilitate the attack of its own infantry. The defense will be menaced only at the moment when it unmasks itself to fire. This moment is short and the rapid-fire gun will take advantage of it better than the old material.

Returning, then, to the examination of the events of the Transvaal, the author notes the absence of shrapnel effect against troops under shelter and likewise its complete insufficiency against the shelter itself. He recalls how General Langlois insisted on this very important point, the consequence of which appeared to him to be that strong localities with lines of trenches would afford a very good point of support susceptible of a long resistance. The General concluded:

"Field artillery ought not to attempt the destruction of these points of support, walls, localities, shelter trenches. field works; it ought to aim at the defenders."

But how? Describing the occupation of a position put in a state of defense, where the troops remained hidden in the trenches, the supports and reserves well sheltered in rear, the general showed that the fire could have no effect.

"Any energetic fire at this time would be wrong." And he gave as an example the attacks attempted in 1870 against the line of investment of Paris:

"The preparation by the artillery consisted in raining projectiles on the points of support of the line, generally villages. for a considerable time before advancing the columns of infantry: *the fire ceased when the attack moved forward.* This mode of preparation always had for a result bringing the infantry against an unweakened defense, leading it to a repulse or a success too dearly paid for."

Captain Gilbert adds:

"Does it not seem in reading these lines that they were written for Generals Buller and Methuen? Is it not the history of their long and sterile cannonades, commenced the evening before or two evenings before the action, lasting 24 or 48 hours, then followed by a delay of several hours? Is it not the history of Magersfontein, of Venters-Spruit, of Vaal-Krantz? The English would certainly have been greatly benefited by studying the solution proposed by General Langlois—that is to say, the intervention of the assaulting infantry, the cooperation of the two arms in the attack."

As soon as the assailant arrives at 1,200 or 1,500 meters the defense will be obliged to line the parapets, and in order to fire it must unmask itself and become vulnerable. It can all then be summed up in this axiom:

"The preparation by the artillery must take place during the actual advance of the infantry under the fire of the enemy's rifles; it must be violent. The action of the infantry must follow immediately that of the artillery."

Is this not precisely the principal conclusion from the campaign which we have seen offered by the German officer who took part in it. Without having developed the subject so extensively, he pushes the application of this axiom to the limit, since he is of the opinion that the artillery must sustain its infantry up to 100 meters from the enemy, even at the risk of inflicting some losses upon it, so important is the support.

Thus the shrapnel, very effective against unprotected targets, has shown itself harmless against shelter.

To remedy these imperfections explosive shell were introduced, which were expected to successfully replace shrapnel in this last case. It was believed that nothing could resist them. But the expectations of their effect have not been fulfilled, either against obstacles or against troops under cover. General Langlois wrote: "To dream of the destruction of the border of Fröschwiller or of Saint-Privat was pure folly; all the munitions of an army corps transformed into elongated shells would not have sufficed to demolish one of these villages."

The example of Modder River, bombarded an entire day by Lord Methuen's shells and all of whose houses were still standing in the evening, confirms this assertion. Though inhabited places preserve their value even before torpedo shell, the true objective of artillery continues to be not the cover but the defender placed behind this cover. But there, again, we meet with the same disappointment. The fragments of the projectiles are so small that they lose their force at 10 or 15 meters from the explosion. And this was an especial defect with these projectiles. The only superiority that can be given them is their very great effect when they burst in an inclosed space. The facts of the war confirm these statements. At first the high explosives terrified the Republicans; but as soon as the first astonishment was passed, they became accustomed to them because they saw that lyddite did not produce great destruction. Here is a striking case. A Boer, between whose legs a lyddite shell burst, was thrown into the air and fell on a sack of flour, without suffering the least injury. On the other hand, here are two cases of considerable effect in a closed place. A melinite shell, bursting in an officer's mess at Ladysmith, did great havoc; and likewise a lyddite shell, bursting in a room at Modder River, killed the seven burghers who were there.

If General Langlois attributed to high explosives a very secondary value, quite different was his appreciation of smokeless powder. It modifies considerably if not the battle, at least its first engagements, since it increases the difficulty of reconnoissances and leads armies to become engaged under unknown conditions. Each arm, taken by itself, is powerless to solve the enigma. Reconnoissance by the artillery has given its negative proofs at Colenso, Modder River, and Magersfontein, and in almost all the battles of Natal and Orange. A few rifle shots will suffice to stop cavalry, which was likewise the experience in Africa. As for the infantry, a few isolated men will accomplish nothing; and as soon as a fairly important force is employed we will see them put to the alternative, either of going to a certain death, or recoiling under a murderous fire, or awaiting the support of artillery. It is, then, the cooperation of the three arms which is necessitated, and quite naturally it will be the advance guard consisting of all three arms which will be the true instrument of reconnoissance.

As to this gaining of contact being rendered more difficult for the assailant by reason of smokeless powder, General

Langlois draws two conceptions: the game of *advanced lines or screens of artillery* on the tactical checkerboard and the game of *covering detachments* on the strategic checkerboard. To covering detachments, the offensive will oppose *advance guards of exploration;* to advanced lines, *advance guards reenforced* by the mass of artillery. Advance guards of exploration and reenforced advance guards are only modes of application of the same principle—that of action from deep formations (*en profondeur*). Before this principle the old idea of the line of defense is obliterated.

We can not follow the entire development of this new idea as it oversteps the limit of our subject. Let it suffice to say that the author, examining in its light the events of the Transvaal, notes that we find on the part of the Boers a certain notion of gaining several points of contact, and of the employment of covering detachments or advanced lines—for example, in the battles which Cronje fought before his position of Magersfontein. On the other hand, the English, with their premature deployment of all their forces on the whole front, ignored completely this principle of action from deep formations. Enlightened upon the difficulties of gaining several points of contact, they sought to avoid the difficulty by covering their approach under the darkness of night. This is an expedient which may be suitable for the storming of a post; we know what resulted from it at Stormberg and Magersfontein.

Captain Gilbert's book stops here. Some lines, added after his notes, give his conclusions: "For the war of the future the lesson to learn from the present war is this:

"The difficulties of reconnoissances and of gaining contact, resulting from the considerable progress realized in armament, show the necessity of advance guards and of covering detachments, and justify the employment of advanced lines of artillery. The struggle on the field of battle must be carried on from deep formations if one wishes to derive benefits from reserves.

"The same motives lead equally to increasing the front of the defensive deployment. The defensive front of an army corps may, at need, have an extent of 8 to 9 km. to the great advantage of the principle of economy of fire and to facilitate the use of the reserves. The latter may then act either *en profondeur*, or at the chosen point of the front, or even preferably in the form of groups detached on one wing or on both wings.

"An army of four corps occupying thus 20 km. would have two of its corps at the center for the frontal fight, those of the wings reserved for maneuver.

"Finally, I have reserved intentionally the lesson which I regard as essential" . . .[a]

As we have seen, Captain Gilbert shows himself a great partisan of the ideas of General Langlois. We have no intention of discussing them, since this article is purely objective. We have referred to them along with the observations of Captain Gilbert, because in his work the observations constantly proceeded from these same ideas. It is interesting to note the part they have played in the elaboration of the new regulations of the French rapid-fire field artillery.

Thus the notion of *batteries in position of observation* flows from the principle of *economy of forces;* but if this point of view has prevailed, everyone does not appear to be in accord as to its application. Let us point out, for example, the reserve with which Maj. G. Rouquerol speaks of it in his recent work, *Emploi de l'Artillerie de Campagne à Tir Rapide.* "It would be fatal," says he, "if we make of it a general rule." Likewise a rigorous application of the principle of action *en profondeur* to advanced lines of artillery does not meet with the unanimous acquiescence of tacticians.

Finally, if the employment of modern arms seems to permit giving a greater extension than in the past to a defensive front, ideas vary much as to the degree of the extension permitted. Thus in Germany they are contented in general to admit the more modest figure of 5 km. for the defensive front of an army corps.

---

[a] What is the essential lesson of which Gilbert wished to speak? Death has prevented him from revealing his thought, and it does not pertain to anyone to try to substitute themselves for him. All his friends—that is to say, those who had the honor of approaching "the greatest thinker of the French army"—will know how to conclude. (General Bonnal's eulogy of Captain Gilbert.)

EXPERIENCES OF THE ENGLISH IN THE SOUTH AFRICAN WAR AS REGARDS CLOTHING AND EQUIPMENT.

By Capt. VON HAEFTENN, Great General Staff.

Translated from the Quarterly of the German Great General Staff for 1903, for the Second Division, General Staff, U. S. Army, by Capt. JACOB F. KREPS, Twenty-second U. S. Infantry.

Had the English officer in the South African war shown himself as thoroughly an educated, experienced tactician as he proved himself a conspicuously practical individual, the English people would have been preserved from many disagreeable disillusions. Whatever in the war, in the province of organization, administration, and especially of practical military clothing and equipment of the troops has been accomplished, under the pressure of necessity and the influence of the late experience in the field, deserves in a high degree our attention. In this respect more can be learned from the English than directly in the province of tactics. Outside of their thoroughly practical sense, the experience of the numberless small colonial wars, as well as their not insignificant knowledge acquired in the domain of sport, and of a practical sanitary régimen, rendered material aid to the English in solving the questions under consideration. And that the average Englishman is practical no one will justly deny.

In the selection of suitable military clothing and equipment of the army employed in South Africa, has this practical sense been especially evidenced. According to the general experiences of this war a suitable and proper war uniform must fulfill two conditions, viz:

1. A war uniform must, as regards its color, conform to the landscape of the seat of war, so that its wearer may be as unobservable as possible, as in the absense of rifle smoke on the firing line lies the most important means of protecting the troops from unnecessary losses. It here behooves us to

follow the example of nature, which furnishes many animals as a means of protection, the color of the country of which they are natives.

2. A war uniform must, as regards the selection of cloth and fit, fulfill the highest demands of comfort and hygiene, in order not to unnecessarily increase the physical and mental exertions of the soldier, which in war, and especially in modern combat, are already great enough.

The experiences of the Boer war of 1881 had already demonstrated that uniforms of red or blue were unpractical in the clear atmosphere of South Africa, and in the open and treeless character of the terrain, as they made their wearers visible at a great distance and brought upon the English, opposed as they were to a foe who, like the Boer, understood how to make his weapon efficient, even at great ranges, unnecessary losses. This disadvantage had increased in importance, due to the adoption of the practically smokeless powder of the modern weapon.

Nevertheless, on the part of the English war office, presumably caused by an ill-timed economy and by respect for antiquated traditions, which are possibly more valued in the English army than in ours, nothing was done to conform the uniforming of the English army to the demands of modern warfare and to undertake a radical change in the same. But one-half year before the opening of the South African war the uniforms were throughout of blue and red color. First, during the summer of 1899, when the outbreak of the war could be foreseen with tolerable accuracy, these important experiences were remembered in the English war office, and new uniforms, of which, in the summer of 1899, not one thread had been woven, were provided in all haste for those troops which in all probability would be first for detail to South Africa. Thanks to the exceptional ability and equipment of the English industries, it was possible by October to nearly clothe the first 40,000 men transported. The director-general of ordnance of the English war office, in a report of January 11, 1900, writes of this as follows:

"The greatest of my difficulties grew from the fact that previous to their departure for South Africa, the troops ordered for that service had to be newly clothed from head to foot. With the infantry, the blue helmet had to be replaced by a white one and the red blouse by one of khaki duck.[a] After the embarcation had already begun orders were given to replace the khaki duck with khaki woolen fabric. Hardly had the manufacture of the khaki wool been begun when a new pattern of service blouse was introduced; this had to be abandoned because the contractors protested on account of the difficulties of production.

"In place of the summer-cloth trousers, were substituted, first, those of khaki-colored duck and later those of khaki-colored wool. Even the boots had to be changed, as the shoe material for foreign service is different from that for home service. Also in the case of the artillery and cavalry great difficulties had to be overcome; in place of cloth-riding trousers those of cord were introduced. The knee boots were replaced by wrap leggings and shoes. Similar alterations had to be introduced in the uniform of the special corps.

"I leave it to any one to decide whether or not the method above described of outfitting troops is, in general, practical and suitable to the needs of an army that is first for duty in case of war. I recommend that as the greater part of our troops are now clothed in khaki colors the opportunity be embraced to introduce khaki as a similar color for the service uniforms of the army."

According to the report of the Royal Commission on the war in South Africa, the overcoming of the difficulties encountered in the new uniforming of the troops, entailed a not insignificant outlay of funds. Had the English war ministry earlier undertook the solution of the exceptionally important problem of uniforming the troops many millions would have been saved.

The color chosen for the new uniform, khaki, was a blending of yellow, gray and brown. Undoubtedly this was a happy choice of colors for the South African landscape, as it primarily conformed to the surrounding natural colors of the country, and proved itself the most neutral color for South Africa. During the subsequent course of the campaign, after exposure to sun and rain, the khaki colors assumed all possible shades, from brown with reddish shimmer, to grayish green.

---

[a] Khaki is an East Indian word, and means a yellow dust or powder. By the term "khaki," as used in this article, the color, not a material, is meant.

But all these shades were more or less neutral in the South African landscape. The present color of the English "service dress" matches tolerably accurately the khaki shades tested in South Africa. However, this color is probably by no means the only one fit and proper for Europe; in the middle European countries where there is much more green in the landscape and the atmosphere by no means as clear as in South Africa, the khaki must have a toning of green. According to the report of an English officer who was present at the great English maneuvers during the preceding summer, the khaki color—a mixture of brown and gray—universally adopted in the English Army at the present time, was distinguishable at a great distance upon a green background; on the contrary, upon a gray or brown background their firing lines in khaki were scarcely visible to the naked eye at a comparatively short distance. "It has repeatedly happened," continues the report, "that notwithstanding the fact that my eyes are very good, I have first observed, without glasses, deployed infantry on an open terrain only after they had advanced a considerable time over an open plain, and then only after I had sharply scrutinized some particular locality called to my attention for some reason. Then, when the field glass was used, numerous skirmish lines were discovered which had before been invisible."

The experiments recently undertaken in England have demonstrated that the dark mouse-gray colors, with a slight greenish tone similar to the color of the uniform of our East Asiatic brigade of occupation, stands out the least, in the European atmosphere, from the different nuances of the terrain, and for our part of the earth's surface must be considered the most neutral color. In the combats of the South African war it was the experience that troops in motion at over 600 meters were the least visible when the color of their uniform was a shade lighter than that of the locality. Darker colors as well as red, and especially white, attracted in the greatest degree the eye and fire of the enemy.

On this account, shortly after the first encounters, the "Scots Grays" began of their own volition to color their gray horses khaki, well knowing that a cavalryman upon reconnoissance duty must be as little visible as possible. It was entirely out of the question to conduct a successful reconnoissance upon gray or white horses that are visible at such great distances.

Likewise the Highlanders, whose dark kilts offered a splendid target to the Boer riflemen, replaced them with khaki-colored shirts, and the artillery strove to merge itself into the surrounding landscape by painting the guns and carriages a khaki color. Only the ambulances preserved a bright color as striking as possible, so that they should stand out to the greatest degree against the surroundings.

Between the uniforms of the separate branches of the service, as well as between regiments, there was absolutely no difference of color in the uniforms; but one color of uniform was seen, namely, khaki. On this account it was extremely difficult for the Boers (and often to their great disadvantage), to determine whether they had cavalry or infantry opposed to them. The long tenacious operation by which the Second Cavalry Brigade, Broadwood, consisting of hardly more than 1,000 men fighting on foot, held the Boer army of over 4,000 under Cronje at bay at Koedoesrand Drift for a whole day, February 17, 1900, and thereby sealed its fate, was partly made possible by the fact that the Boers did not recognize the cavalry as such, and were of the belief that they had English infantry opposed to them. Had Cronje known that only a small part of the cavalry division blocked his way, he surely would not have permitted himself to be long held back.

The disadvantage which existed within their different organizations (no distinction in uniforms between regiments) was obviated by an order of November 2, 1899, which specified that each regiment should wear upon the left side of the helmet directly over the ear its particular regimental ornament, which formerly had been worn upon the shoulder strap.

But far more than the differences of colors, any glittering or shining article drew the fire of the enemy. "The smallest shining metal button operated in the sunlight like a miniature heliograph," so runs the report of an eyewitness from the seat of war. Even a metal mounting on the straps, the clasp of the sword belt, the bright mess equipment of a soldier prone on the ground often betrayed the position of the line and frequently caused the troops unnecessary losses. With the "Guard" at the fight on the Modder River, November 28, 1899, it was observed that the aluminum telescope of an officer, and in another case the aluminum canteen—the location of the line being betrayed in no other way—attracted the not agreeable attention of a machine gun located 1,400 meters distant. Even the polished leather of the equipments reflected the sunlight and had to receive a dull finish. Our colonial troops in South Africa undoubtedly have lately had the same experiences. The disproportionately great number of casualties among officers and noncommissioned officers who wore the officers' side arms, is traced in part to the gleaming of the steel scabbard, which attracted even at great distances the eyes of the keen-sighted native-born Boers.

The English must have had the same experiences in regard to the Boers; the consequence was that following the very first engagements of the war, a complete revolution in the uniforms of the officers was accomplished. Everything glittering or shining was removed; the officers' side arms, which had been proved not only useless but absolutely dangerous to their wearers, completely disappeared. The strap of the "Sam Brown" belt worn diagonally across the chest, was laid aside, and likewise the stars and crowns upon the shoulder straps; in fact all insignia that distinguished officers from enlisted men were removed. The pattern of the officer's blouse was made to conform accurately to that of the soldier's; in place of the saber, the officers carried carbines. This idea in itself well grounded in principle, was carried to excess. Surely it was absolutely necessary to protect such a costly hard-to-be-replaced officers' corps from unnecessary losses; but insignia of rank, visible marks of difference between commander and commanded, must exist, for the leader must always be easily recognized and discoverable by his followers. Later, in the course of the war, the officers resumed their insignia of rank, which, however, were made of brown or bronzed metal and were worn generally on the back of the blouse collar.

In a general order from the general headquarters dated February 5, 1900, the following appears, viz: "* * * it is difficult to distinguish the officers in their present equipment and uniform, and it seems very desirable that they should wear some distinguishing mark either upon the back part of the blouse collar or on the back of the blouse itself." Nevertheless, infantry officers carried the carbine during the whole campaign. However advantageous this might have been in hiding the officers as such from the enemy, it had this great disadvantage that they (the officers) took part in the firing during the engagements instead of directing their attention to the enemy in general and to the supervision of their own particular commands.

On this account it has been proposed to arm the officers with a fire weapon, only for the purpose of deceiving the enemy, and to deprive him of ammunition for the same in order to remove the temptation to take part in the firing. The best weapon for the leader in the modern combat, a combat that must be carried on and completed at great distances, against an enemy in a very inconspicuous uniform and against a practically smokeless powder, is the field glass, and moreover, the best that modern ingenuity can produce. This was recognized by the English, also, during the later course of the war. All officers, and to a great extent noncommissioned officers also, were equipped with a very good field glass, part in fact with the costly Zeiss instrument.

No small difficulty was experienced by the English war ministry at the beginning of the war in the selection of a suitable material for the new khaki uniforms. At first it was made of duck and a light, half-wool serge; these two stuffs, however, during the course of the war did not stand the test, as they, although light, were very warm on account of their thick and impervious web and in the tropical climate uncomfortable to wear.

In a land like South Africa where the thermometer often within 12 hours ranges 25° R. (56¼° F.), material wholly of wool is the best; it is the best adapted to every climate, every season, to rain and drought, heat and cold; therefore, later in the war, uniforms were made entirely of woolen material, principally woolen cloth; it had, it is true, this disadvantage, that the soldier while advancing through underbrush is easily caught by the limbs and brambles and is likely to tear his uniform; in a seat of war like South Africa, where there is a great deal of briery underbrush, it is more practical to choose the smoother cord as a material. In order to preserve the hygienic advantage of the wool, the blouse was lined with a light flannel. Later the duck blouse, dúring the warm season, was issued to the garrison troops and those of occupation, who were less exposed to the influences of the South African climate; here the canvas proved satisfactory.

As regards the pattern of the khaki uniform blouse, it was a model of practical comfort, and it had been well provided, that the physical and mental efforts of the soldier, who in present warfare must fight for hours, even days, in a prone position, should not be unnecessarily increased by a binding, cramping fit of the uniform. It fitted so comfortably that the soldier could run, climb, crawl, and sleep in it, absolutely free and unconstrained. During the first period of the war, particularly during the advance of the army under Lord Roberts upon Bloemfontein during the days of Paardeberg, both officers and men did not remove their clothes during a week or even longer without finding it especially detrimental.

The khaki uniform was worn in this war willingly and contentedly by everyone. It fitted loosely, so as to make allowance for shrinkage due to moisture and to permit the wearing of a vest or of similar under-garments. It was very comfortable about the neck. For the standing collar formerly worn, a rolling collar with two hooks had been substituted; under this, ordinarily, a khaki-colored silk neckerchief was worn, which was very comfortable; the wearing of a standing linen collar was exceptional. The enlisted men at the outset wore nothing under the collar; this proved, however, disadvantageous, as the perspiration soon penetrated the collar and made it stiff. Later, in many organizations, a woolen neckerchief was selected for the soldiers. The blouse had on the exterior four large pockets, two on the chest and two on the hips; and in addition to these, one in the lining of the front part of the skirt. All the pockets were made to button. The four large pockets proved excellent for carrying ammunition and rations, as the troops on many occasions laid aside all dispensable articles of the equipment before entrance into battle.

Very practical were the small leather straps placed on the blouse cuffs; the sleeve in rainy weather could be buckled close around the wrist to prevent the entrance of the rain water.

The new uniform trousers were made of Bedford cord, a somewhat heavy but uncommonly durable material. They were cut according to the pattern of the English riding trousers, for all arms of the service, mounted or dismounted, and were accompanied by leggings. This covering of the lower extremities proved excellent for war purposes and is worthy of imitation. Cases of chafing in the mounted troops were the exception; even during the extremely trying operations for the relief of Kimberly and the pursuit of Cronje in the middle of February, 1900, no such cases were reported in French's cavalry division. The practical qualities of these English riding trousers lie in the close-fitting cut under the knee, in the great breadth of the seat, as well as the great length of parts covering the upper thigh, which permitted a free comfortable movement of the knee; from the knee down the trousers fitted snugly; around the ankle they were either strapped or buttoned; then where the leg pressed the saddle there was no seam.

As foot wear, the high or half boot, such as is worn by us, was everywhere tabooed. The Englishman, thoroughly experienced in the school of sport, rightly reasons that a mountain climber or a runner would never select such a foot covering, as it makes the escape of the foot exhalations very difficult and renders the skin of the foot very sensitive. After it has been wet the boot is drawn on with difficulty; moreover, it is very difficult to accommodate it to a chafed or galled foot. In the English army during the campaign only the lace shoe was worn by all arms of the service. It had no tongue, the flap under the lacing was made of one piece with the shoe so that water could not enter. The mounted troops fastened to the lace shoe a buckled spur, which, however, was placed above the heel so as not to interfere with the soldier in moving on foot. This foot gear proved very satisfactory during the whole campaign, in all seasons of the year, and especially in severe rainy weather and in heavy clayey soil.

The different arms of the English service had, therefore, notwithstanding here and there very long marches, extremely few foot troubles. For example, the Sixth and Ninth Divisions, in the pursuit of Cronje from the 15th to the 18th of February, during which period they had several very extraordinarily long marches to make several days in succession (several detachments over 45 km. in a day), had very few cases of sore feet. The exact number has not been officially made known. In consequence, the two divisions early on the morning of

February 18 were able to give battle in practically full strength. This fortunate result of the pursuit is in part to be ascribed to the good foot wear. Moreover, lace shoes or short boots are ordinarily obtainable everywhere in an enemy's country, but high boots very seldom.

In connection with the lace shoe and riding trousers the English soldier wore the "puttie," a kind of legging in the form of a bandage, made of a strip of khaki-colored, very thick flannel, 2½ meters long and 12 cm. wide, which was wrapped around the leg from the knee down. This bandage upheld the calf of the leg very effectively and gave it, in marching, an excellent support. The putting on of the bandage required at first some little practice, but later the soldiers could put it on or take it off in less than a minute. The puttie reached from the knee down to the shoe, to which it had to be very carefully adjusted, in order that in rainy weather water could not enter the shoe from above. In cold weather the puttie was as warm as leather. If it were wet through by the rain it acted like a wet bandage during the march, and during a rest could be easily and quickly removed and replaced by another. Later, however, the putties were replaced here and there by others of waterproof material. In warm weather these leggings were more comfortable on the leg than leather ones, as they were not so warm and permitted to a greater degree the escape of the exhalations of the leg. An appreciable advantage was that in lying down, either during an engagement or for the purpose of sleeping, they exerted no pressure as leather leggings ordinarily do. In packing they took up such very little room that every soldier could carry one or two pairs of putties with him. Washing and cleaning of the puttie was quickly and easily accomplished; they dried in the air in a very short time. Few of the officers wore the puttie. The greater number used the puttie legging of thick, stiff leather.

Officers and soldiers of the regular troops wore the cork helmet as a head covering, which proved to be an impracticable head gear. Its stiff form interfered greatly with the soldiers while firing, especially in the prone position, and while resting the same quality showed itself as a disadvantage. In addition, on account of its white color, it was visible in battle at long distances, and offered to the Boers a splendid target.

The consequence was that ordinarily the troops removed it in battle; at Colenso, December 15, 1899, and Paardeberg, February 18, 1900, where a scorching temperature prevailed under a cloudless sky. The result was that the men suffered greatly from the sun's heat, direct and reflected, and a large number experienced sunstrokes. The khaki-colored, wide-brimmed felt hat of the colonial and volunteer contingents proved to be much better. It was light, did not bind, protected against the hottest sun's rays, as it was doubled or lined, and it could be worn while shooting or sleeping. A leather chin strap served to retain it in place during running, riding, or in a strong wind. The material out of which the hats were made was compact and durable, so that rents in the felt very seldom occurred. Our older experienced officers of colonial troops characterize the last as "the best of head gear for all climates so far experimented with." It has, as opposed to the helmet, in connection with which a cap must always be carried for use, the advantage that it in itself answers all purposes as a head covering. The vizorless English field cap, which covers only a part of the head, was entirely unsuitable for use in the hot sun's rays.

At the commencement of the cold season the army was issued the warm Indian uniform coat of thick woolen cloth and lined with flannel. It was drawn on over the uniform, had a row of horn buttons, and was patterned in the form of a jacket, so that it could be comfortably used on mounted duty. Both officers and soldiers prized it highly. The long, wide English cloak of thick waterproof blue cloth was not well liked, and was considered more as a burden than as an object of comfort. General Hilyard, before the Royal Commission, criticised it very unfavorably as follows: "The cloak was not worn by our soldiers on account of its striking colors and of its great weight; when rolled, the large size of the cloak, even when the men were in the prone position, offered the enemy a very favorable advantage."

As to underclothing, every man wore thick cotton drawers, thick woolen stockings, a woolen undershirt with half sleeves and fully covering the trunk, and a blue flannel shirt. An important part of the small clothes was formed by the wide flannel abdominal bandage. According to English opinion, it should form a part of every military clothing outfit.

In the infantry, in addition to his rifle, every soldier carried the side arm with waist belt, the two large cartridge pouches, cooking utensil, canteen, and a large linen haversack.

The additional equipment, viz, knapsack and contents, intrenching tools, blanket, and tent outfit, was transported with the baggage. The weight of the equipment carried by each soldier was only 19.6 kg. (42½ lbs.), and in consequence less than that of the German (27.8 kg.-61.16 lbs.) and French (26.5 kg. = 58.3 lbs.) armies. This lightness of equipment explains in part the various splendid marches and the extremely small number of sick therefrom.

Of the parts of the equipment before named, the cartridge pouch decidedly failed to stand the test. Its principal fault, according to the report of the Royal Commission, was *that*, when the soldier was double-timing or running, the cartridges very easily fell from the pouch. Likewise Lord Kitchener strongly criticised the pouch: "Our great loss of ammunition in this campaign, which furnished a source of supply to the enemy, was less to be ascribed to the lack of care on the part of the soldier than to the extraordinary inutility of the part of the equipment in which he had to carry his ammunition." After the first engagements the cartridge pouches were thrown away by many of the men and replaced by cartridge belts such as the Boers and various colonial organizations wore. These belts, however, were made for single cartridges only and did not hold these in a sufficiently firm manner, while those of the Boers were made to hold clips of cartridges. The Royal Commission therefore, strongly recommended in its report the adoption in the English army of a cartridge belt such as was worn by the Boers, as by its substitution for the pouches the serious and unnecessary loss of ammunition by the soldiers in rapid movement could be obviated most speedily. The method of carrying ammunition employed by our colonial troops is very practical: also the clothing and equipment of this corps, as well as that of the East African "Besatzungs Brigade," in this and in other respects seem suitable for active service, and in various details, after judicious modifications, seem worthy of imitation for European conditions also. By the above-mentioned troops the ammunition is carried in clips, the clips being placed in small pockets, each of which contains from 2 to 3 clips (10 to 15 cartridges), these pockets being fastened to the broad waist belt and slings.

The large linen haversack was primarily made of white material, but during the campaign was colored khaki; it served at first the same object as ours in Germany. As the knapsack, however, was very heavy, and, when packed, badly balanced upon the back for carrying (Sir Charles Warren, in the presence of the Royal Commission, characterized the English knapsack as "an absurdity"), it was later not carried by the men, but left with the baggage. From this time on the soldiers placed the absolute necessities in the haversack and this latter became later, in addition to its original purpose, a substitute for the knapsack. Although primarily carried by means of a broad strap passing over the right shoulder to left hip, or by means of two hooks fastened to the waist belt, it was ultimately borne as a pack upon the back, and, like the German knapsack, the weight was supported by two slings passing over the shoulder and the pack fastened to the belt. The two large cartridge boxes formed the counter weight.

In the haversacks, as a rule the soldier, in addition to the absolutely necessary cleaning material, carried an iron mess can, a ration of bread or biscuit, the woolen cap, a pair of woolen stockings, as well as (when a fight was in prospect) ammunition. The other personal effects of the soldier, as well as extra clothing (1 pair canvas shoes, 1 flannel shirt, 1 pair underdrawers, woolen stockings, puttie, sewing outfit, towel, soap), were ordinarily packed in the knapsacks. It was left, however, to the judgment of the commanders of the tactical units to direct changes, in every special case, in the marching order of his men. In this way the troops could from time to time be made independent of the baggage train, and it not seldom happened that individual commands did not have their knapsacks at hand for many days without specially missing their contents; for example, the troops that took part in the combat of Spionkop were compelled to shift without them from the 15th to the 27th of January.

Undoubtedly the marching ability of the English infantry was greatly increased by the small burden carried by the individual soldiers; on the other hand, the train on this same account was not materially increased. This increase in the train was not especially noticeable in South Africa on account of the comparatively small number of troops employed, but in the case of the tremendous armies of the great states of Europe, the train would be immeasurably increased. The weight of equipment, etc., now carried by the English infantrymen is determined for every occasion by regulations based on campaign experience similar to those before described. In the last maneuvers, according to the report of an eyewitness, the baggage train of a battalion, the strength of which was only 500 to 600 men, consisted of from 13 to 15 wagons. A similar increase in the train under our conditions is impossible, and in consequence the German soldier must carry with him all that he needs, however disadvantageous the increase in weight carried may be.

The canteen was made of aluminum, and over it a thick khaki-colored covering of felt was drawn; this before and, if possible, during the march was wetted, so that the contents, even in very warm weather, remained cool for a long period. Issued to the soldier as part of his equipment was a large, strong pocketknife with a ring, by which (with a small chain) it was suspended to the back part of the belt.

The majority of the English officers called before the Royal Commission delivered a very unfavorable opinion on the entrenching tool carried by the men. The small spade, which is similar to the German one, was considered too weak; it was more burdensome than useful. Later a strong entrenching tool was issued and was transported in small, light, mule carts which closely accompanied the troops. In many cases pack mules were used to carry not only the entrenching tools, but also ammunition. One pack mule was sufficient for a company.

With the cavalry the question of the weight to be carried by horse and rider was of greater moment than with the infantry. Concerning the reasons for the great loss of horses in this war,[a] opinions, it must be admitted, are widely divergent. However, very noteworthy opinions, among them that of the commander of the cavalry division of General French, were to the effect that a material source of the great loss was the too great burdening of the horse,[a] especially at the beginning of the campaign. It was sought to rectify that defect by the provisions of several orders. The following appeared in a general order of February 5, 1900, from general headquarters, viz: "On cavalry reconnaisances and patrols which in all probability will have a duration of not more than one day the pack and equipment of the cavalrymen will be lightened as much as possible, and nothing will be taken along except what is absolutely indispensable." Simultaneous with this the following order to all mounted troops was issued by the chief of staff, Lord Kitchener:

---

[a] For example, the cavalry division (French), which at the beginning of the operations under Lord Roberts, early part of March, 1900, had about 4,800 horses, lost over 2,000 during the advance on Bloemfontein, February 12 to March 13.

"CHIEF OF STAFF,
"*Cape Town, February 5, 1900.*

"The following suggestions concerning the diminution of the weight of equipment, etc., carried by the cavalry horses is hereby brought to the attention of all concerned. They have been compiled by Major Rimington, of the Sixth Inniskilling Dragoons, and are the result of the personal experience of this officer during the present campaign. The commander in chief expects from the commanding officers of all mounted troops that they will do all in their power to diminish the weights carried by the horses in so far as it may be possible.

"KITCHENER OF KHARTOUM, A. B.
"*Chief of Staff.*

"The following make up the equipment of man and horse: (1) a warm cloak; (2) cooking outfit with one ration; (3) grain sack (reserve ammunition, if necessary, can be carried therein); (4) a good halter of neat's leather (colonial pattern); (5) wire cutter; (6) carbine (to be carried by trooper); (7) cartridge belt with 50 cartridges (also to be carried by soldier); (8) haversack with 50 cartridges (carried by soldier); (9) knife and lariat; (10) canteen; (11) field glass; (12) knife, fork, and spoon (in haversack); (13) saddle of the Cape police, made according to English pattern, and blanket.

"Of the former carried equipment the following are to be left out: (1) clothing bag and contents; (2) horse-grooming outfit; (3) horseshoe holders and reserve shoes; (4) hay net; (5) extra shoes; (6) breast straps; (7) tent pegs; (8) hoof scraper.

---

[a] Weight of rider (of light weight) included, it amounted to from 19 to 20 stone (266 to 280 lbs).

"The following articles wrapped in a blanket and to be loaded upon the wagons: (1) 1 pair light shoes; (2) 1 pair stockings; (3) 1 extra shirt; (4) 1 woolen cap; (5) 1 extra pair trousers; (6) 1 woolen underjacket (carried by soldier during cold season); (7) towel and soap; (8) during the cold season a second blanket is to be added."

General French, before the Royal Commission, advanced a much more radical proposal concerning a reduction of the weight carried by the horse. Based upon his wide war experience, he gave it as his thorough belief that it is especially necessary to unburden horse and rider as much as it can possibly be done; in his opinion, the trooper should carry with him only his weapons and ammunition.

"In a modern war," he continued, "it will surely be necessary for the cavalry, only too often, to pass nights in the open, and to subsist on the country, and frequently, no doubt, it will be unable to find proper forage."

"Nevertheless it will be fully impossible in the future to overburden our cavalry as we did in the last campaign, if we wish it to properly perform its function as cavalry."

General French proposed to attach to the cavalry light carts or pack animals, according to the character of the country, on which all extras in the way of forage and equipments, which formerly were carried on the horse, should be transported. These light carts should closely accompany the squadrons as "first-line transport," while the present regimental "transports" should form the "second-line transport," and the commissariat train the "third-line transport." As a result of the efforts in this direction, the weight of equipment, etc., carried by the horse was so reduced that many cavalry regiments, especially those that arrived later, carried neither saber nor lance, and had the carbine, later the rifle, as the only weapon. In consequence, the cavalry deteriorated in value to nothing but mounted infantry. But that the South African war has taught that the fighting effectiveness of cavalry in the future demands the employment of the fire weapon only is one of the many false doctrines which this war, on account of the little varied character of opponent and seat of war, has developed. A genuine cavalry will be able to dispense with neither the saber nor the lance, as additional weapons to the firearm, however disadvantageous they may be to the mobility of and on account of the increased weight carried by horse and rider. It is a question, however, if the value of cavalry, as such, can not be enhanced by equipping it with a better firearm, especially one of greater range, as its effective action in fighting on foot is displayed in the majority of cases at great distances, viz, by issuing it the infantry rifle instead of the carbine. With the present method of carrying and holding the carbine—be it upon the back, as now in the Russian and part of the English army (colonial formations), or at the right side, as in the German army—this much to be desired change is not, however, possible.

Later, in the South African war, several of the English cavalry regiments carried the rifle in a vertical position at the left side, the stock resting in a contrivance fastened to the left rear side of the saddle, and with the barrel held fast in the rear of the left shoulder of the rider by a special apparatus. This method of carrying the weapon is the prototype of a new invention by Lieut. Col. J. H. Patterson, D. S. O., of the Essex Imperial Yeomanry.[a]

This apparatus is constructed in two parts, one carried by the trooper, the other fastened to the saddle. It consists of a broad leather belt to which, on the left rear part close to the spinal column of the trooper, is fastened obliquely a metal slot about 9 cm. (3½ in.) long. The rifle when slung is fastened to the belt by means of a stud fixed to the lower band of the weapon, which is inserted in the slot. The rifle thus hangs upright with the barrel to the rear close to the left of the rider's back. In order to transfer the weight of the weapon from the hip to the shoulder, a strap passing over the right shoulder is fastened to the belt. When the rider is dismounted the butt of the gun does not touch the ground.

After mounting the rider transfers the weight of the piece to the horse by pressing the small of the stock into a metal spring clutch attached to the left side of the saddle, which clasps the piece directly in rear of the trigger guard. The clutch is fastened to a leather frog, which in turn hangs from the back part of the near side of the saddle. A slight blow against the stock is sufficient to force the small of the stock into the clutch.

---

[a] One of these Patterson rifle carriers was under test by the United States Cavalry Board at Fort Riley, Kans., during the summer and autumn of 1904.—Editor.

By the movements of dismounting the piece is freed from the clutch, so that trooper and weapon are separated from the horse. When the trooper is mounted any chance plunge or fall detaches the weapon from the clutch, so the equipment is a source of no danger to the rider. By slipping the stud from the slot the rifle is ready to hand for use.

An opinion as to whether or not this invention is practical in every respect for all military purposes can not be here delivered, as further tests are necessary. It is especially a question if the mechanism, particularly the clutch on the saddle, is sufficiently strong and durable, and if it will not be injured or will not even be an impediment in column and line movements. Assuredly, with this method of carrying the carbine in use, the saber must be worn on the right side. This, however, would be open to no objection. On the other hand, it would divide more equally on the two sides the load carried by the horse. The foundation idea of the invention, however, is undoubtedly sound and practical. It has, as compared with former weapon-carrying equipments, very important advantages. Especially would it not only make it possible to arm the cavalry with the long-range infantry rifle, but also would eliminate the great disadvantage of fastening the weapon, as in our service, to the saddle. The rifle would by this system be attached to the trooper. If he, through a sudden fall or wound, were thrown from his horse, he would not be absolutely weaponless, as formerly. Of course, through the employment of this or a similar carrying equipment, the rider is fastened to the horse; but this disadvantage is only a seeming one, for this fastening is so light that if the rider from any cause is separated suddenly from his horse the piece in every case is loosened of itself from the saddle.

Other advantages of this contrivance are that the trooper, either mounted or dismounted, has both hands free, and the loss of time due to the necessity of removing the carbine from the saddle is dispensed with, so that the soldier is sooner ready for action. Further, this method of carrying the piece is more comfortable to the rider while mounted than all others, and permits of a free and unhindered use of the lance and saber; moreover, in a hand-to-hand conflict the barrel of the piece protects, to a certain degree, the back of the trooper. Finally, the weight and cost of manufacture of this invention are less than those of former appliances of the same kind.[a]

Lieutenant-Colonel Patterson has his invention, which he himself tested in South Africa for two years, to thank for his life. Concerning this, he writes to the author as follows: "During the last war in South Africa I had trotted forward alone upon a reconnaissance and rode, without noticing it, inside of the enemy's lines. Suddenly I was fired upon at short range. I had run upon a detachment of about one-half dozen Boers and received one bullet through the hat and another through the sleeve, but I myself was untouched. As soon as I was fired on I sprang from my horse and threw myself into the high grass that grew in this locality. As I sprang from my horse my rifle had detached itself from the saddle, thanks to the carrying equipment, and remained at my left side. Protected from sight by the high grass, I now crept from the place at which I had sprung from my horse, to a small hillock near by, from which I, in my turn, opened fire on the Boers. Apparently, they believed that they had killed me by their first volley, and were so surprised and frightened by this unexpected fire that they, on their side, took to flight most promptly. I was fortunate enough to kill two of their horses and to wound three of the men. I brought the latter back to our camp as prisoners."

This small fortunate *coup de main* received a flattering mention in a "special dispatch" of Lord Kitchener of July 9, 1901.

During the latter part of the South African war, different organizations of cavalry and mounted infantry tested the Patterson invention. The opinions given concerning it were universally favorable and flattering. Lately, it is true, a few less favorable reports have been received from English officers in

---

[a] For further on this subject see pages 139 to 142, "Bulletin of Military Notes" for June 30, 1904.—*Translator's note.*

Egypt who tested the apparatus during the last year. They criticize the mechanical part of the invention, and assert that the clutch easily relaxes and sometimes breaks; likewise, that the insertion and removal of the stud into and from the slot is too difficult for the soldier. Other authoritative opinions, however, dispute these disadvantages and declare very decidedly for the adoption of the Patterson invention.

During the past year Lord Kitchener instituted tests of this contrivance in the Indian army. These were so satisfactory that not long since the invention was generally issued to this army. The tests in England have not as yet been completed.

The experiences of the South African war have instilled new life into all departments and branches of the English army. In addition to reforms in the tactical instruction of the troops, and in the organization and administration of the army, the war has brought about a complete revolution in the clothing and equipment; everything antiquated has been rejected and the experiences of this war have been fully utilized. The unanimous opinion of all officers educated in the school of war experience, is that the question of clothing in war is such a great and serious one that human vanity or former small formalities can have no voice in the matter. Hence, the uniform worn and tested in South Africa was, before a twelve months had passed, adopted in the English army as the so-called "service dress." It is in many respects to be looked upon as the model of a practical, war-service uniform, from which, before all, everything polished or shining has been removed. It has, moreover, the advantage of being becoming and of having a thoroughly military appearance.

In the opinion of a military expert who, the past summer, during the English maneuvers, for the first time saw the new uniform in use, "the new field dress is not only a practical and simple but also a becoming war uniform; the cloth gathers little dirt, and, notwithstanding the bivouac they had just made in the rain, the troops made an orderly, tidy, very military appearance."

With a proper appreciation of the value of the traditions attached to the former uniforms of many organizations, the English army administration has been regardful of them when possible, and has preserved them in the new outfit. So, for instance, the Highland regiments have retained the kilt, to which they clung with such great pride, only, instead of the bright-checkered kilt, one of khaki is now worn.

For parade, when off duty, and on leave, all regiments will wear the former colored and more ornamental uniform until further orders. The military authorities of all the great powers have anew been led by the experiences of the South African war to more earnestly consider the question of supplying the troops with clothing and equipment more suitable for war purposes. Thorough preparation for war demands the early settlement of this question.

THE LATE SOUTH AFRICAN WAR AND ITS LESSONS.[a]

By Gen. H. BONNAL.

Translated for the Second Division General Staff, U. S. Army, by Second Lieut. CHARLES M. ALLEN, Artillery Corps.

The *Revue des Deux-Mondes* of June 15, 1902, published under the heading *Lessons from the South African War*, an anonymous article which received much notice in France and other countries.

In the course of this article, written in an animated style, the author expresses various opinions, some of which are concurred in by most military men and others more or less contested.

The present article is an analysis of the article in question, which, aside from its own value, has over similar works the great advantage of containing the notes of a witness of the battles which took place on the plains of the Orange River.

Like all analyses the following article repeats the essential passages of that of the *Revue des Deux-Mondes*, followed by comments.

The article of the *Revue des Deux-Mondes* is divided into three parts:

An introduction of several pages contains a résumé of the evolution of the art of war from the time of Frederick the Great until the present time.

The first part is devoted to a description of the customs and warlike disposition of the Boers.

In the second part the author describes the operations of the English from October, 1899, to February, 1900, then gives place to an eyewitness of the operations on the veldt.

The third part contains the conclusions of the author with a view to the next European war.

---

[a] Published by R. Chapelot & Co., No. 30 Rue de Passage Dauphin, Paris (1903).

INTRODUCTION.

Can the continental armies derive profit from the lessons of the South African war?

Assuredly, especially as to the properties, now well known, of a small-caliber rifle, using smokeless powder, and having a very flat trajectory, from which will result tactical dispositions accentuating the evolution manifest during the last century, of successive attacks and an economy of strength.

Certain military instructors deny it, and especially those who, taking for gospel the history of the Napoleonic campaigns in the science of strategy and even of tactics, obstinately wish to use with modern weapons the methods of the past.

The author refuses to certain military instructors all power of adaptation.

The reproach is no doubt merited, for there are two kinds of military instructors—those who persist in following the beaten paths, and those who, having a mind of their own, strive to develop in their students powers of observation, of judgment, and decision, so necessary to the man of war.

The true military instructor is one who gives small time to didactic teaching, but who turns most of his attention to the study of concrete examples, turning his back on gospels as well as on speculative teaching.

Thus it is that in the greater part of the grand maneuvers of Europe one still sees, after a more or less extended preparation by fire, attacks called "decisive," executed by infantry in compact masses, directed against the enemy to the accompaniment of their bands with drums beating the charge.

Decisive? Certainly. Since the 18th of August, 1870, such attacks have been so for the troops making them. Without exception they have terminated in bloody disasters.

If the methods of instruction of the large units were of a really practical character, and if the knowledge of tactics in all its branches were more fully developed, our grand maneuvers would to a certain extent have the appearance of real war.

We say "to a certain extent" because, on account of the short time given each day to the combat, properly called, the grand maneuvers can be only an outline of the operations on the field of battle.

It is in the garrisons and camps of instruction that companies, battalions, regiments, and brigades ought to be trained to act as they would in the presence of the enemy. There at least one knows from where attacks will come, while in the grand maneuvers this is impossible.

The grand maneuvers would be only trials of endurance for the troops and exercises for the different arms of the service, but it would be necessary to keep them up.

Attacks *en masse* without sufficient preparation are to be condemned.

Under Napoleon I the rôle of an attack *en masse* was not so much to fall upon the enemy with compact bodies of troops as to push to the extreme a former success gained at the decisive point by the combined action of numerous batteries and bodies of infantry fighting as skirmishers. The attack *en masse* acted then as a reservoir, from which could be drawn the elements of fresh efforts to enlarge the breach and transform a partial success into a complete victory.

Though the attack *en masse* directed against an enemy still in the possession of the greater portion of his forces is a crime, it suffices to immortalize the general who, having prepared it, makes it succeed.

According to the author the decisive attack of the Germans on St. Privat, August 18, 1870, should have ended in a bloody disaster. It was, however, this attack, made as night was falling, which procured them the victory and in a measure decided the fate of the campaign.

The author no doubt had reference to the premature attack of the First Division of the Prussian Guard a little before 6 p. m. This attack is in fact the most striking example one can cite in favor of the necessary combination of the fire of artillery and infantry to make a breach in the enemy's line.

Under the circumstances, none of the conditions of success having been fulfilled, the disaster of the First Division of the Guard ought to have been complete, and so it was, without, however, carrying with it the flight of the troops who composed it.

> But the priests of the Imperial cult do not admit changes. They extol the action *en masse* of the beginning of the century. They resolutely refuse to recognize the principle stated by the master: "An army ought to change its tactics every ten years."

The priests in question can only be, in the mind of the author, the "certain military instructors."

No more action *en masse!* It is easy to say so, but with what shall we replace all the methods known and tried by experience for subsisting, maneuvering, and fighting a million men opposed to another million men in a theater of operations relatively restricted?

The principle which the author attributes to Napoleon is inexactly stated. It should read as follows: "It is necessary to change the tactics of war every ten years if one wishes to maintain some superiority."

The expression, "the tactics of war," as used by Napoleon, had a very general meaning, applying even more to strategy, as we know the term to-day, than to tactics proper.

The author complains of the resistance to progress in the armies, especially the older ones, and, as a stimulus, calls up the specter of Jena, using, of course, the German point of view. But if the Prussians were beaten at Jena, it was because Frederick was dead and Napoleon very much alive.

> Nevertheless, the power of the rifle in the hands of skirmishers was a factor to be reckoned with. Frederick did not make use of it, because in his time fire-action counted for little. The bayonet was the deciding factor.

It was not the power of the rifle, using flintlock and spherical bullets, which gave to the skirmishers of the Revolutionary armies, beginning with 1794, an overwhelming superiority over troops formed in line at close order.

The skirmishers of the Revolutionary period took position at fighting distance in front of an enemy who was stationary and formed in three ranks, the men standing shoulder to shoulder.

Under these conditions the scattered skirmishers had before them a very vulnerable target, while a majority of the enemy's shots fell in their intervals. But this was an advantage of secondary importance when compared to that which was secured by the Republican armies in the use of reserves.

In fact, the linear order required the deployment of almost the entire force in a stationary and compact line, while the use of skirmishers required a portion of the effective force varying only from one quarter to one half; hence the Republican leaders possessed strong reserves, which they knew how to throw at the proper moment against the salient points of the enemy's front or flank, whose capture carried with it the downfall of the entire line of defense.

Before the enemy's line, strong as a whole, but relatively weak at the point of attack, on which would converge the main efforts of the three arms, the skirmishers, forming curtains, removed from the fire action that character of rapid decision which it had in the time of Frederick, and thus secured to the command the time necessary for maneuvers and dispositions in preparation for the decisive action.

Victory was gained then by directing against the entire line of the enemy a series of partial attacks by skirmishers and in using at the proper moment an overwhelming force against some skillfully chosen point.

To say that Frederick did not utilize fire action is to betray an imperfect knowledge of his battles. Never, perhaps, has the power of musketry fire manifested itself in so decisive a manner as in the battles of Prague, of Kollin, and of Leuthen.

An élite of officers, such as Bourcet and Thiel, professors of Bonaparte at Auxonne, prepared the tactics of the Revolution, which replaced those of Guibert and of Gribeauval.

The tactics of the Revolution sprang into being without preparation, since they were developed under the hard rule of circumstances and necessity. Who could be made to believe that the Revolutionary generals, all more or less improvised, hence lacking all military instruction, could be influenced by the researches of a Bourcet or of a Mesnil-Durand?

As to Gribeauval, we do not believe even now that he was a great tactician, his glory of having created a very homogeneous system of artillery always having appeared to us to be merely a technical one.

Another error, which is opposed by the present science of psychology, consists in thinking that Thiel could have been an instructor of Bonaparte.

Such a man as Napoleon never had an instructor. He developed wholly in himself, by direct observation and reflection on events in which he took part, and thanks to his exceptional ability to separate the important from the unimportant.

A man such as Hannibal or Napoleon makes his impress on the military science of his time and carries it to the highest degree of perfection that it can then attain. He shows by admirable examples the dispositions which are suited to the circumstances and means of his time, and nothing more. It is useless to attempt to imitate them to-day, when our instruments of war differ entirely from theirs.

Let us pass over Hannibal and the military science of his time, the term "science" supposing a degree of intellectual culture which the Carthaginian generals probably did not possess, and turn to Napoleon.

The author is persuaded that this man carried military science to its highest degree of perfection.

He, and he alone, personified the military art of his time, after having stifled the initiative of subordinates, crushed the personality of superiors, and so completely absorbed all the functions of command that his lieutenants, as soon as they were left to themselves, after 1812, became an easy prey for opposing generals of a second order.

Could one find in France after Waterloo a trace of the military science to which Napoleon had given his imprint?

In Europe, the Prussians alone knew how to profit, after his death, by the lessons of the master, and it was through them that they were able to conduct, in the skillful manner known to all, the fruitful campaigns of 1866 and of 1870-1871.

Our present instruments of war differ from those used by Napoleon, but not absolutely. The art in time of peace consists in appreciating at their just value modifications in organization, means of transportation and communication. finally, in armament, and in applying to all the best methods for attaining the supreme object, which is victory.

The tactics of the future will depend much more on the moral condition of the nation at the beginning of the war and upon the individual energy of the soldier than upon the power of its armament.

The tactics of to-morrow, a little different from those of yesterday, will give good results if our corps of officers, composed of good material, vigorous, and enthusiastic, has been able to acquire a knowledge of the real conditions of the battlefield, and to give to the rank and file, mentally and physically, a solid military education.

The effect of rapid-fire arms and smokeless powder forced the English to totally abandon their former methods. A new system of tactics, entirely different from that now applied in most European armies, has been improvised and adopted by them.

Everyone knows that among English officers various sports are held more in honor than professional study. Intellectual standards are affected by this. And again, the English officer is too much absorbed in his outside duties to give much time to his company. Despite these unhappy conditions, the practical mind and force of character inherent in the Anglo-Saxon race must soon lead the English to discover and put in operation a system of tactics appropriate to a special kind of enemy, such as were the Boers.

The same thing took place at the beginning of the conquest of Algeria. After numerous checks, due to tactical dispositions not adapted to the special conditions of a war in an Arabian country, the French generals, and first of all Marshal

Bugeaud, chose the special mode of action necessary in order to conquer, and their success was constant thereafter.

But in 1870, when our generals, educated in the school of the Algerian campaigns, were opposed to German troops, they could not, lacking sufficient preparation, modify the methods dear to them, and their professional inferiority became flagrant when compared to adversaries who had cultivated industriously the traditions of the great wars, and had taken into account the material progress which had taken place in all branches of human activity.

The author takes a stand against the criticisms addressed during the South African war against the English commanders and their troops. His principal argument in favor of the English army consists in saying that the officers were prodigal of their blood and that the troops of 1899–1900 were excellent.

In August, 1870, the French officers and men showed a bravery of the highest character, and yet the French army of this time could not conquer on any single day, even when through favorable circumstances it was opposed to inferior numbers, as at Spicheren, Borny, and Mars-la-Tour.

The criticisms of the English generals and troops accentuate, not their lack of bravery, but their tactical impotency.

Until the arrival of Lord Roberts in South Africa the Enlish made use of the pure linear system of tactics, like the French in 1870, and like them had to suffer the unhappy consequences.

PART FIRST.

The ten pages devoted by the author to the character, customs, and manner of fighting of the Boers contain a full résumé of all that has been said or written of this unique people.

The Boer is in the full sense of the term a "mounted infantryman," who understands perfectly how to make use of both his horse and his rifle.

In partisan warfare the Boers showed themselves incomparable, but throughout the operations at the close of the war they could only defend positions naturally very strong, without ever making a counter attack, even when their superiority of fire had, to a certain extent, put the enemy at their mercy.

Again, the Boers – individualists in the extreme, without discipline, and lacking all power to maneuver—could never hold out against an enveloping attack, which was for them always the signal for a disorderly retreat.

PART SECOND.

The author states that in 1899 there took place at the camp of instruction on Salisbury Plain maneuvers which preceded by a few days only, the departure for South Africa of some of the troops taking part.

It can be stated here that their methods of fighting were very nearly those of a majority of European armies, more particularly, perhaps, with regard to the cavalry and artillery.

There can be no doubt that the author wrote the preceding lines in good faith, but the foreign attachés who saw the English maneuvers shortly before the South African war reported an impression less favorable.

Moreover, General Sir Redvers Buller, who directed the maneuvers of 1899, shortly before his departure for South Africa, did not show himself to be very optimistic, and his criticisms emphasized the lack of tactical instruction of the English troops.

This officer called attention to the insufficient preparation of attack, the massing of troops, absence of unity of action, and the ignorance reigning in each arm of the service on the subject of the tactics of its sister branches.

General Buller said of the English cavalry and infantry, "that they know where they ought to go, but they are ignorant of what they have to do when they get there."

In other words, the English troops know how to form according to regulations, but they can not adapt themselves to the varying circumstances of the action.

Their tactical impotency can not be stated in polite terms in a clearer way.

After praising the maneuvering ability of the English army the author leads the reader to the battle of Talana Hill, October 20, 1899:

General Symons, commanding 4 battalions of infantry, 1 regiment of cavalry, and a body of Natal police, about 4,500 men in all, had established his camp to the west of and near the little village of Dundee. At 4,500 meters, a cannon shot to the northeast, there lies a line of heights, Talana Hill, Impati-Mount, etc., from which the town is separated by a moderately deep valley.

General Symons covered himself toward the enemy by a line of advance posts placed on these heights.

The troops in camp, thus covered to a distance of about 5 kilometers, believed themselves safe. They did not take into account the fact that one line of advance posts, however well placed, is always surprised when it is attacked, in its supposed positions of safety. It was for this reason that Marshal Bugeaud organized his system of outposts which allowed the line of advance posts to be transformed in a short time into a line of battle.

On the other hand, we read in the excellent and very complete history of the South African war compiled under the direction of the Second Division of the General Staff:

Although commanding the English camp at about 4,000 meters these heights (Talana Hill, Impati-Mount) had not been occupied on the night of the 19-20 October except by a small post of mounted infantry.

This, then, is what the line of advance posts, placed on the heights which commanded the English camp at 4,000 meters resolves itself into.

The comments of the author on the so-called placing of a line of advance posts on the heights to the east of the English camp lose at once all instructive value and are stricken out bodily.

Besides, these comments express a false idea; for advance posts, properly placed, intelligently connected, with the several elements properly performing their duties, can not be surprised.

What shall we think of the Bugeaud system of outposts, which permitted the line of advance posts to be transformed in a few minutes into a line of battle?

The author would probably not have written this sentence if he had looked up the chapter in the works of Bugeaud which treats of the service of security at night of a completely isolated detachment.[a]

Let us return to the battle of Talana Hill.

The commandos under the orders of Gen. Lucas Mayer occupied the heights of Talana Hill at 3:30 a. m., drove back the little advance post, and opened fire with their 5 guns, about 5 a. m., on the English camp.

Surprise, disorder, then formation of troops in good order and return fire by the English artillery till 7:30 a. m.

Three English battalions then move in battle formation directly against the Boers occupying Talana Hill, and toward

---

[a] "Military Works of Marshal Bugeaud," collected and arranged by Weil, former captain of cavalry, p. 98, Librairie Baudoin, 1883.

1 p. m., after various efforts, dislodge the enemy from his position.

During the action a squadron of English hussars, sent alone to act against the enemy's rear, was surrounded and captured.

The English losses were 10 officers and 31 men killed, 20 officers and 165 men wounded, and 9 officers and 211 men taken prisoners.

The author of the article of the *Revue des Deux Mondes* says of this battle:

> The action commenced and was carried out in the regulation manner.

Who has ever seen a regulation, even an English one, which required the bull to be taken by the horns?

The regulations prescribe formations, from which the commander makes his choice and then modifies to suit the circumstances; but there are not and can not be tactical regulations.

However, our regulations of May 28, 1895, on troops in campaign give under the heading of the combat, certain advice which General Symons would have done well to follow, and mentions the following points to be distinguished in every action of an isolated force: The preparation, or attack on the enemy's entire line, and the decision obtained by a violent effort concentrated on some well chosen point and, finally, success.

The history of the Second Division, General Staff, brings out this point in a forcible manner when it states:

> The heavy losses of the English infantry during its advance without cover should not come as a surprise, knowing the effect of modern armament. They show the advantage to be gained by maneuvering, instead of making a frontal attack. Guided and covered by an advance guard action, General Symons might have been able to dislodge the enemy by maneuvering against his flanks.

On the Boer side a minimum loss, but complete passivity with a very skillful employment of their fire.

The author takes care not to describe the battle of Elandslaagte which took place the next day, October 21, and in which General French by combining an advance guard action with an enveloping movement, was very successful in beating down the resistance of a detachment of Boers under General Koch.

This battle contradicts the reasoning which the author seeks to establish, through a preconceived idea, that the tactical methods of the English underwent a continuous transformation, under the influence of events, from the beginning of the campaign to the taking of Bloemfontein.

The article of the *Revue des Deaux Mondes* then gives a very succinct résumé of the battles of December, 1899, and January, 1900, all more or less unfavorable to the English arms.

According to the author:

> The English threw themselves on the enemy without having defined his position by reconnaissance. They employed deep formations, using successive lines, which received all the bullets sent by the enemy.

What is this reconnoitering action the regretable absence of which is pointed out, if not the "advance guard action," a term disliked so much by the author?

According to him it was only on January 20, 1900, at the battle of Venter's-Spruit that the change of tactics he delineates brought it about that on this day the two battalions at at the head of the Woodgate Brigade:

> Formed in long, thin lines and advanced by rushes. They arrive at the plateau, which is approached by a glacis of about 900 meters, and try to ascend. But here, after considerable losses, they are stranded. These troops do not yet know how to carry through an attack.
>
> Lord Roberts will show another way. The evolution of tactics is accomplished. Its theater of operations will be the Orange Free State.

Thus, on January 20, 1900, the English troops were ignorant of the proper means of succeeding in an attack, but one month later their change of tactics was completed, thanks to Lord Roberts, and this change was particularly remarkable, in that henceforth every action with the Boers ended in victory for the English.

One can believe this easily when one knows that the troops of Lord Roberts, eight or ten times more numerous than those opposed to them, acted after the fashion of an army of game hunters.

On February 18, General Cronje, not having retired soon enough or quickly enough towards the east with his 4,500 Boers, was surrounded near Paardeburg Drift, on the Modder River, by the divisions of Lord Roberts.

The investment of the Boer camp was completed at noon. The English should have confined themselves on this day to a general and methodical tightening of their lines; but their division commanders, breaking away from superior authority, thought they were doing well in pushing their attacks home, each on his own account, at what appeared to him to be the most favorable moment. These partial attacks withered under the Boer fire and caused considerable losses without the least profit.

We see in this, as in other cases, that the English generals, as well as their troops, knew but one method of fighting, the decisive attack.

This bloody affair of February 18 is the last in which the English sought to force a position by employing the old methods.

The author would have better said *their* old methods, for in other European armies the "decisive attack" was not, as with the English, the Alpha and Omega of tactics.

After the capitulation of Cronje (February 27, 1900), the investing troops, strength about 45,000 men, of whom 12,000 were mounted, with a strong force of artillery, took up their march across the veldt under the skillful direction of Lord Roberts, and adopted a method of approach well suited to the circumstances.

The 4,000 or 5,000 Boers whom they could possibly meet in position on the kopjes scattered over the plain, knew how to use fire action only, to the exclusion of all maneuvers.

Besides, it was advantageous to move deployed on a large front, so much the more as the movement was directed on Bloemfontein, capital of the Orange Free State, and it was therefore certain that the Boers would interpose themselves between this town and the invading force.

According to the author, the front covered was often over 20 kilometers.

The army corps advanced in line of brigades, and each of these (8 in number) covered a front of 2 to 3 kilometers, counting intervals, and an equal depth.

To change from the marching formation to that of attack, it sufficed to increase the intervals between the different elements.

The advance guard was formed of mounted troops, with light artillery.

According to the author, the four battalions composing the English infantry brigade formed a sort of open double column, each battalion having its eight companies in column at 100 meters distance, and in each company the men in one rank with three or four paces interval. Each brigade column was so formed as to be numerically superior to any enemy it could meet.

At ten to one this condition was easy to obtain.

The author also says that on such a large front (20 kilometers or more) the columns meeting the enemy in position stopped and opened fire at long range, while those not finding an enemy in their front continued to advance and then closed in on the enemy's rear.

We could have deduced this fact ourselves.

The means employed by Lord Roberts to dislodge the enemy during the march on Bloemfontein, and later on Pretoria, were ingenious and perfectly adapted to the requirements of the situation. One can but praise this general for having cast away the forms of war in use in European armies and adopting in their place others inspired by the nature of the country and the tactics of the Boers.

NOTES OF AN EYEWITNESS.

The author of the article in the *Revue des Deux Mondes* borrowed extensively from the personal notes of an officer whom he designates by the modest title of "Eyewitness."

These extracts are of great interest, because they describe with a strong tone of sincerity the events personally seen.

During the march from Paardeburg on Bloemfontein General French commanded the advance guard, consisting of 1 division (3 brigades) of cavalry, 1 division (2 brigades) of mounted infantry, 7 batteries of horse artillery, and several sections of machine guns.

This advance guard, more or less divided, preceded the army by 15 to 20 kilometers. It is this, and this alone, that is referred to in the following lines:

> Generally the task of making the frontal attack fell to the mounted infantry. It dismounted under cover at about 2,000 meters, and leaving the horses here formed lines of skirmishers and tried to take advantage of cover.
>
> The assailants could not, in general, advance to within less than 800 meters, at which distance the enemy's fire became extremely effective, due to absence of smoke and the denuded character of the country.
>
> It seemed that at about 800 meters there was a barrier almost insurmountable.

In an open country every rifle has a distance called that of "effective fire," which depends on the curve of its trajectory.

This distance with the 18 mm. gun, spherical bullet, was from 150 to 200 meters.

It reached 300 meters with the same gun, when rifled and using truncated projectiles expanded by a hollow in their rear surface.

In 1870 the range of effective fire varied from 350 to 450 meters, and it would have been 500 meters if the Germans had not had a greater interest in approaching to 400 meters on account of their weapon (the *dreyse*) having a trajectory much more curved than that of the French *chassepot*.

If this war had been fought with the rifle model 1874, using metallic cartridges, the range of effective fire would have been 600 meters.

With the rifle now in use in most armies the range of effective fire should be from 700 to 800 meters, and the experience of the South African war goes to confirm this theoretical deduction, which is sustained, besides, by firing on the range.

It is at this range that one can reasonably hope to obtain and hold a superiority of fire, when this is considered necessary.

It goes without saying that the effectiveness of fire increases from 700 or 800 meters as the distance grows smaller, and this distance is considered the closest to which a body of skirmishers, sheltered or lying down, can push an attack under truly effective fire without exposing themselves to ruin.

Save in the case of obstacles or cover assisting the advance in the zone under 800 meters, infantry skirmishers could not then advance in this zone unless the fire of the enemy was more or less checked by opposing artillery or infantry, or by the combined fire of both these arms.

The formation adopted to advance through the zone 2000–800 meters was in one rank at 3 or 4 paces interval, without supports or reserves. Everybody was in line. Besides, it was not sought on this portion of the field to produce a violent effect. They counted on the action of the wings, the effect of the artillery, finally on the arrival of the main body. They sought, above all, to gain time, and often the close of the day closed the attack before they had reached the threshold of the 800-meter zone.

The mounted troops under Geñeral French were divided into three parts—the center, very much scattered with a view to the advance-guard action, destined to reconnoiter and find the limits of the enemy's position; the wings, concentrated out of sight of the enemy for the purpose of acting against his flanks, once these had been found by that portion of the advance guard acting against his front.

This was a judicious disposition, provided that the advance guard as a whole was numerically superior to the enemy, and that the enemy always remained chained to his position.

Against a stationary enemy anything could be dared save premature frontal attacks.

The advance was made by rushes from one shelter to another. Open ground was shunned, not only when stationary, but also when advancing.

The battles of the war of 1870–71 show on the German side methods of approach identical with those here described.

The advance was made by groups more or less strong from cover to cover, excluding all formality, the end to be attained dictating the means to be employed.

Almost all the officers got into the habit of sending forward to the next cover non-commissioned officers or good men, while they themselves superintended the movements of their command. The contagion of example has always been a resort more powerful for moving men forward than an impulse from the rear.

This practice is not a new one. It was in use for some time, and no doubt continues to be used in one of our army corps that we could mention, with the difference that here the chiefs of section move forward themselves to the next cover and then signal their men to join them.

The English method seems preferable because it allows the officer to watch the laggards, always the same.

The line of skirmishers, as formed in the beginning, did not hesitate to change form under the influence of the cover. The cover ruled the intervals and fixed the form of the line of battle.

The influence of cover has been described also by officers of infantry, both French and German, in all the battles of 1870–71.

The contact action now holds the enemy in front. The action of the artillery occupies his wings. The enemy does not move. The enveloping movement will occupy a considerable extent of time.

This contact action is nothing but the advance-guard action as we know it, and in this case simple mixed patrols would have sufficed, since the enemy really held himself.

The action of the horse artillery on the two wings was due to the fact that the batteries were systematically divided between the two groups of cavalry or mounted infantry formed behind the wings of the central group charged with the execution of the frontal attack.

When this action appeared ripe the flank groups, moving by platoons, marched under cover until opposite the enemy's flanks, reunited, dismounted, and formed tactical units, which took position on the flanks to open a musketry fire.

At this moment the day generally came to a close and the Boers, seeing themselves flanked, commenced to beat a retreat.

The pursuit was confined to a few shells fired at the convoy. During this time the frontal attack (advance-guard action against the front) had regulated its advance on the retirement of the enemy, in place of precipitating their retreat by a decided offensive action.

* * * * * * *

As an excuse for this slowness in pursuit there has been brought forward the state of fatigue of men and horses on the approach of night. In reality it was due to nervous exhaustion. The nervous tension caused by danger produces such physical fatigue that some men who have not moved all day, but who have been subjected for long hours to a fusillade, are incapable of any effort. With modern arms this tension is greater than formerly, and the resulting depression is also greater.

It is fully conceded that the English troops employed in the frontal attack, long submitted to an effective rifle fire, should have been too much fatigued to have thrown themselves on the enemy in retreat; but the other troops, detached on the flanks, and whose action had been as short as it was recent, why should they not have pursued the enemy?

It was because, having left their horses far in rear, the flank troops were incapable of all rapid movement.

This statement is sufficient to condemn the method which required the whole strength of cavalry to dismount, even when, due to peculiar circumstances, its principal function was fire action.

We come now to the phenomenon of nervous exhaustion in the case of the mounted infantry engaged in the frontal attack, who were exposed for several hours to a fire at distances around 800 meters.

This state of the nerves is well known, and officers who took part in the battles of the Franco-Prussian war remember having observed in their men, when they were heavily engaged at the range of effective fire of the time (about 400 meters), a mental and physical depression, increasing with the length of the action.

In such circumstances the soldier is as if chained to the ground, and if he fires at all it is due to the instinct of self-preservation, which incites him to kill to avoid being killed.

The South African war teaches us nothing in particular on this subject, but it shows that the range of effective fire has reached the point of 800 meters to-day in place of 400 meters as it was in 1870.

This statement of the doubling of the range of effective fire permits us to say that attacks insufficiently prepared and whose objectives have been unskillfully chosen will give rise to shambles more bloody and not less useless than formerly.

The art of superior command will be more delicate and more difficult certainly.

But does one not see in all branches of human activity the perfection of tools demanding more skillful workmen?

If the modern law of division of labor results in developing to the extreme in the artisan the power of thought necessary for the execution of his task, it requires much more skill to properly direct an industrial, agricultural, or commercial establishment, and still more to properly command a large unit of the three arms called to fight not only against material difficulties, but most of all against an enemy provided with the most effective means of action.

The phenomena of psycho-physical depression, already noted in 1870–71 and in 1877–78 among skirmishers fighting at the range of effective fire, can not fail to be accentuated in the future with a reduction in the length of active service and on account of the absence of smoke, which renders objectives almost invisible and often causes bullets to fall apparently from space.

This highly important fact acts in favor of progressive and sparing action of the infantry units in the first line.

We will be led, we think, to withdraw from the action some units which have been subjected to a heavy fire when they can be replaced by fresh units.[a]

Infantry engaged for several hours will, in fact, have lost all combative power, and will be only a demoralizing element for the reenforcements which come to them.

It must be said, in conclusion, that in order to continue a frontal attack all day, or perhaps even for several consecutive days, the echelon of troops from front to rear, otherwise called the perpendicular order, is more necessary than ever, and is opposed to the extension of front, which seems at first sight to be required by the perfection of our weapons.

This action of the mounted troops forming numerous advance guards often sufficed to open the way for the infantry divisions; but it often happened that it did not bring the required result, either because the enemy held his ground too well or because the line of defense was of too great an extent.

The eyewitness from whom the preceding lines are taken does not hesitate to employ the term "advance guard" for designating the light troops charged with reconnoitering the enemy, holding him in front, and even sometimes maneuvering against his flanks.

---

[a] This was done in several cases in the war of 1870, notably with the Prussian Eighth Corps August 18 at the farm of Saint-Hubert, and on the eastern border of the valley of the Mance.

The author himself has for the words "advance guard" an extreme dislike, for which we are unable to account.

The notes of the eyewitness then describe the deployment of the army, preceded by oblique movements of the wing columns, the going into action of the artillery, the march of approach, the entrance into the zone of artillery fire (between 4,000 and 3,000 meters), and lastly the arrival at 2,000 meters from the enemy.

At this distance the wounded could still be gathered and removed, and mounted officers could remain with their commands.

At about 1,500 meters the attacking party opened fire. The fire was at will, lying, using the magazine. In order to move as little as possible, the men learned to load while lying face down.

The opening of fire marked a slackening in the progress of the attack. As soon as the advance was resumed, anything became a pretext for halting and firing again—officers or men wounded, favorable shelter, halting of neighboring companies, etc.

Let us not forget that we are on the veldt, an immense prairie, broken at intervals by ranges of kopjes.

Despite this unfavorable condition for the approach, we can not praise the English infantry for having opened fire at 1,500 meters from the enemy.

To-day, as in the time of Marshal Bugeaud, "to open a long-range fire is the act of poor infantry."

To open fire at long range it is necessary to fire at a distance much greater than the range of effective fire, which from 200 meters in 1860 increased, at least in France, to 400 meters in 1867, to 600 meters in 1874, and to 800 meters in 1886.

In each battalion the necessity of taking part in the fire and not continuing to submit to losses without attempting to inflict some in return, brought on the firing line the companies in rear. Thus the columns deployed without special orders to do so. The arrival of a fresh company did not cause a forward movement, because the newcomers, impelled to seek shelter and open fire, stopped at the same obstacles which held the first line.

The same phenomena were observed in 1870–71 with the Germans on the offensive.

At this time, already far in the past, the companies in reserve, when they could not obtain shelter and found themselves exposed to fire directed at the first line, had a strong tendency to join the firing line and take part in the fire.

The arrival of a fresh company on the firing line sometimes caused an advance movement, but not always; and, in our opinion, our Regulations of 1875 and 1884 should not have required absolutely that every reinforcement of the firing line should be the signal for another rush forward.

To return to the English. The frequent halts of their firing line between 1,500 and 1,000 meters did not give evidence of a very strong offensive spirit. What would have happened if the Boers could have made use of numerous rapid-fire guns?

To go to the bottom of the matter, the English soldiers were not animated by a true fighting spirit, but fought merely as a professional duty, seeking above all to preserve their precious existence. In each battle the losses among the officers, out of all proportion to those of their men, showed likewise that the soldiers lacked keenness.

The four rear companies of each battalion were held 500 meters in rear. They formed line deployed in one rank, occupying a front equal to that of the firing line.

The English battalion being composed of eight companies of about 100 men each, its firing line of four companies in one rank should have measured from 300 to 400 meters.

In all formations of approach or combat it was merely a question of subdivisions marching by the flank or in Indian file. This fact is well to remember.

The reserves were held at 1,500 or 2,000 meters from these companies; the battalions composing them kept their marching formation in column of companies deployed in one rank with intervals. But the distance between companies changed unceasingly, giving the impression of an accordeon, regulated by the accidents of the ground. In directing their fire (artillery) on this formation, the enemy's gunners ought to have been disconcerted by the instability of the target, rendered still more difficult of definition by the khaki uniforms, blending exactly with the color of the veldt.

This open-woven human carpet presented throughout its extent an equally slight vulnerability. No part attracted special attention, and the division of the objective, reduced to the state of human powder, caused a dispersion and reduced the effect of the enemy's fire.

We must not forget the special conditions under which the English made their march across the veldt.

In the first place the enemy was ten times less in number than the invading force. In the second place its action was one of purely passive defense, without any maneuvers whatever. Finally, its artillery was reduced to a few guns, scattered singly over a large area.

To be sure, Lord Roberts solved the problem by diminishing his losses to a minimum, but he did so at the price of breaking all the bounds of tactics and scattering his men to the point of reducing them to "human powder."

It is told that at the brigade maneuvers commanded by the German Emperor, the 29th of May last, on the field of Tempelhof, there was an occurrence that does not lack interest.

The advance guard battalion had taken the approach formation, called by antithesis *Boersturm*, which consists in placing the four companies deployed as skirmishers, one behind the other, at 100 or 150 meters distance.

It is really the formation of the English on the veldt.

Everything was going well, when, in the course of the march of approach, the battalion was attacked in flank by several squadrons debouching by surprise from a fold of the terrain.

The cavalry rode freely through the spaces between companies, and it was decided that they had received in all one dozen bullets. In reality, they would have overturned the rows of skirmishers like rows of cards.

On this occasion, if William II wished to give the officers of his guard a good practical lesson, he completely succeeded. This shows besides that our neighbors in the east have an eye open to the tactical methods in use abroad, even when they are of a very special character, and that they do not hesitate to put them into practice, discarding them if they do not satisfy the conditions of war in Europe. More important occurrences took place at Döberitz; they will be discussed later.

It the second line sought safety in its formation, the first line sought it above all in the terrain. The cover took all symmetry from the line, ruled the intervals between groups, and the density of the skirmishers. Squads, sections, entire companies, gathered behind them, according to their size. They had an irresistible attraction for the men.

The use of cover was greatly developed in the actions and battles of 1870–71, as shown in the numerous French and German monographs published immediately after the war.

Once the action was started, one could see nothing but flashes and a little smoke, because the skirmishers on both sides were hidden behind cover or lying flat.

The fighting lines were not visible except during a partial or general attacking movement. It is evident that the use of cover on the firing line will have a greater importance in the future as cannon and rifles become more powerful.

This formation (of attack) was continued up to a zone which by an instinctive empirism, founded on certain indications, was estimated at about 1,000 or 800 meters from the enemy.

These indications, which, lacking a visible enemy, guided in the estimation of this distance, were the following:

Every collective movement on the firing line caused the enemy's fire to be redoubled.

The Mauser rifle, 7 mm., using a clip, with which the Boers were provided, is an extremely powerful weapon, which permits an overwhelmingly effective fire being obtained at a distance of 1,000 to 800 meters against a target very much restricted; but the acute vision of the Boers was a highly important factor, and it can be believed that European riflemen could not have done as well.

One can conceive that the rifle could be perfected to such a degree that at the distance of a thousand meters, for example, it would permit a fire against a little group of three or four men lying down, with the same probability of hitting as to-day at 400 meters with the rifle in service; but could a European rifleman, taken from an agricultural village or industrial town, see such a small object at 1,000 meters?

At 800 meters commenced the last act of the battle. The groups which had in front of them an open country halted, submitted to the enemy's fire, and watched what took place on their flanks. * * * On the contrary, those who could obtain broken country or one affording cover, continued to advance. The advance in the zone under 800 meters is the hardest problem to be solved.. From the moment of beginning the action in this zone the cover favored the different groups unequally. Some would find themselves unexpectedly close to the enemy, while others were still far off. The firing line then took on sinuosities, which put it at the same time at 400, 600, 800, 500 meters * * * from the line of defense.

This is the way the offensive action against the enemy's front should be conducted: A continuous advance of the elements of the first line to the limit of cover nearest the enemy, for the purpose of holding him, demoralizing him by inflicting loss, and thus preparing for the action of fresh troops charged with breaking down his resistance at some chosen point.

The idea of a frontal attack has become familiar to most officers, thanks to the works of certain writers (not to offend the author of the article in the *Revue des Deux Mondes*); in this case they had the most happy results.

This kind of fighting excludes all formality; the important thing is to place guns to saturation behind every bit of cover afforded by the terrain, leaving the open spaces empty or at most occupying them with small parties, held at least 800 meters from the enemy.

The various officers who have taken part in these approaching actions affirm that their direction is absolutely lost to the generals and superior officers. Their direction rests on the initiative of inferior officers and soldiers, accidentally guided by the signals or example of subalterns.

This was a fact even in the battles of 1870, and if the "eyewitness" author of the notes we are analyzing thought he was bringing forward something new he was mistaken.

The rôle of generals and superior officers is not to direct the action of skirmishers properly speaking; this is the work of captains and lieutenants.

A body of infantry in action loses all higher direction, and is incapable of any maneuver save advance or retreat.

On the other hand, this body becomes enfeebled, *consumes itself* very rapidly, and its power of action would very soon become nil if measures were not taken to reenforce it by means of fresh troops coming as it were to infuse new blood in its veins.

This is where the higher officers as well as the generals intervene for the proper use of supports and reserves.

Their intervention in an action of skirmishers is limited to "nourishing," and yet in this way they exercise considerable influence over the results of the action.

In this violent action each man carries his life in his hand, and applies himself chiefly to taking cover. He does not fire except when under cover. When he is near enough to the enemy to catch a glimpse of him during the brief moment of a rush at full speed, he gives little thought either to his officers or to his neighbors. He does not desire any reenforcement, which will cause an increase in the enemy's fire. The quality of his cover is of more importance than anything else; it renders the man stationary, but renders him also less accessible to the impressions which might cause him to beat a retreat. In fact, he is conscious that whether he leaves his cover to advance or retire, the danger will be the same. This sticking to cover, especially at short ranges, was a constant factor with which commanders had to reckon.

The perfect egoism of the English soldier, which is a characteristic of his race, accords well with the foregoing lines.

Certainly the English soldier has shown in this war, as he did in those of a century ago in Spain, great bravery, allied with much sang-froid and tenacity. But he is above all an individualist, and this quality, excellent in commerce, is not so good in war, which requires great self-abnegation.

The Russian motto, "Perish, but save your brothers," will never be agreed to, much less put in practice, by the English.

The French skirmisher would be happy over the arrival of reenforcements, even if this provoked an increase in the enemy's fire, for in this he would see a sign of success.

The English soldier takes the unique view that any reenforcement will cause him to run into greater danger.

In the different frontal actions it was always the initiative of certain groups of skirmishers that brought success.

In any case it was not brought by a push from the rear.

On the veldt the Boers, numbering 10,000 to 12,000, defended, successively, lines of kopjes often 20 kilometers in extent.

It is not surprising, then, that certain English groups should have been able to force the enemy's line at some point or other, and by either irruption in the position cause the retreat of groups near the positions taken—a retreat which gained by degrees the entire line of defense.

The success in the frontal attack having been gained by the skirmishers alone, independently of the superior commanders, who had not seen, much less pointed out, the points to be attacked, the impulses coming from the rear could not have gained the victory.

The situation would be entirely different in a battle with well-organized European troops. Here, partial successes by a few groups of skirmishers would have no effect on the whole, and in order to win it would be necessary, as in the past, to make a very energetic and well-sustained attack on the enemy's entire line and to combine frontal attacks with one or more attacks on the section chosen by the superior commander; attacks operating by surprise, and provided with means greatly superior to those with which the enemy could oppose them.

It often happened that the intervention of troops, up to that time more or less out of action, appearing unexpectedly on the field, decided the fate of the day.

The flanks of the enemy served as an objective and might thus find themselves between two fires.

The surprise attack on the enemy's flank is one of the most favorable conditions of success. The English had recourse to it as often as they were able. It was not difficult for them on account of their enormous numerical superiority.

The irruption was made often on an entirely different point, as the flank. It was of the greatest importance that the troops should be able to advance under cover from fire, preserving intact their enthusiasm and force of action.

That which determined the direction of their march and their objective was not any peculiarity of the line of defense, but simply the direction and locality of the mouth of the topographical depression which had favored their approach. Thus the issue of the battle was often the result of an incident of the action in place of being brought about by a series of converging efforts and increasing energy directed by the superior commander.

The essential condition of all decisive attacks is that the troops charged with their execution arrive in full possession of their powers at a short distance from the point to be taken, which causes us to say again that these troops, already covered by the frontal action, ought to find in the terrain particularly favorable facilities of approach.

If we have followed the sense of the above text, the English troops in the second line, finding in their advance a covered way, went into it as water runs into a river and followed its windings to its end, a short distance from the enemy, and from here made a surprise attack on the nearest part of the enemy's line.

The celebrated riding master Baucher often repeated, "Spurs are like a razor in the hands of a monkey," and advised mediocre riders to remove their spurs before mounting a horse.

Generals who do not know how to organize, prepare, and then to launch a decisive attack at the proper moment and in the proper direction ought to have the sense to renounce this very perilous mode of action. This was what was done by the English generals during the second phase of the campaign.

After having totally ignored in the first part of the war the advantages of an attack such as we have described, and having brought on themselves grave misfortunes by their headstrong attacks made without judgment, the same generals later abandoned the reins to their troops and contented themselves with assisting at long range in a soldier's fight.

Against the Boers, fighting one to ten, such errors could not bring serious consequences to the English, and they had the advantage of limiting their losses to a minimum, but it is not necessary to make regulations for applying such simple methods to European battlefields.

Everyone knows what such practices lead to when the enemy is well organized, instructed, and commanded.

> The combination of a frontal attack with an attack on the flank, or a sudden irruption on some other point, should not be considered as sure to bring success to the offensive. It has been remarked, in fact, that as soon as the enemy can turn to face these new attacks they are transformed into frontal attacks, and soon find themselves paralyzed.

That is a truth as old as the art of war.

A flank attack or a central attack has no chance to succeed unless one or both of the following conditions are fulfilled:

1. An attack by surprise, barring the intervention at an opportune time of the enemy's reserves.

2. The use of very superior means, artillery, infantry, sometimes even cavalry, against the point of attack; means such that the enemy shall be powerless to reestablish an equilibrium at this point.

PART THIRD.

As we have commented on the extracts from the notes of the "eyewitness," we will not analyze the conclusions drawn from the same by the article in the *Revue des Deux Mondes*.

We shall, however, examine a few of his conclusions.

The author, taking his desire for a fact, attributes to a majority of the English officers a flow of ideas which led them to change from bottom to top the tactics now in use in European armies.

We do not believe that the greater part of the English officers were capable of reasoning on a question so deep, since their military education has until very lately been to a great extent neglected.

Let us examine a few of the principal reforms extolled by the author.

> The action of masses, in use at the beginning of the nineteenth century and now held in honor in the greater part of the armies of Europe, is going to find itself replaced by the action of screens and the combined action of numerous mixed columns.

We must suppose that the author was unlucky in his choice of expressions, and that his meaning was that the action of masses will be replaced by the action of screens obtained by means of the combined operations of numerous mixed columns.

In other words, the author seems to wish to divide the large advance guards of former times into a large number of small mixed advance guards, destined to act against the entire extent of the enemy's line.

Thus restricted, the author's views would not be excessive and would only show a tendency justified to a certain extent by the power of the present armament.

But if masses give place to advance guards (or screens), during the period of the frontal attack, as they have done for a century in well-commanded armies, their action will not be the less indispensable in deciding the issue.

Premature generalization belongs to superficial minds, and to manufacture hard and fast rules for European warfare from the experiences of the South African war would be to apply to everything, great and small, the treatment required by some particular case.

The power of the rifle and the invisibility of the enemy render the enemy's front difficult to take by assault.

During the war of 1870–71 such frontal attacks were always repulsed by fire, with heavy loss to the assailant.

It is sufficient to recall the following repulses:

(*a*) On the morning of August 6, 1870, at the battle of Worth, the advance guards of the Second Bavarian Corps, Fifth and Eleventh Prussian Corps.

(*b*) On August 16. at 4.30 p. m., the Thirty-eighth Prussian Infantry Brigade.

(*c*) On August 18, the Seventh, Eighth, and Ninth Corps of the Prussian Guard during their attempts to break the line of defense.

(*d*) On January 13 and 14, 1871, during the numerous French attacks on the defense of the Lisaine.

To-day, much more than formerly, the enemy's line should be approached with every precaution, allowing all the time necessary, and proceeding more by a galling fire pushed forward more and more, than by the use of great force.

Victory should be sought in a combination of fire-action on the enemy's front and flanks.

Musketry fire has never sufficed to cause the retreat of brave troops when they were well commanded.

To force the enemy to evacuate his position, it is above all necessary that the attacking infantry should approach to assaulting distance. At this moment the enemy sees himself, under pain of a hand-to-hand encounter, obliged to leave his cover long enough to fire; it is then that the artillery crushes the defense by its *rafales* killing, wounding, or dispersing him, and thus opening the way for its infantry. The enveloping maneuver hastens the decision of the action, since its effect is to take the enemy's flank between two fires. This fact is as old as war itself.

The author then considers the case in which the defender, foreseeing the envelopment which menaces him, sends his troops to meet those of the assailant. The latter, not finding an uncovered flank, are obliged to make a frontal attack on the line improvised by the defense and, as the author says, "are driven to seek a decision in a frontal attack."

In this frontal attack, numerical superiority is no longer a decisive factor. This factor rests mainly on approaching movements, carefully defiladed, and protected by the combined fire of artillery and infantry.

Hence, when the attacking party must depend on its own fire, the individual bravery of the soldier, who exercises initiative and courage freely and without possible control, becomes the factor of success.

Hence, more choice of the principal point of attack; more previous maneuvers to unite at the chosen point the troops of the three arms, designated to strike the decisive blow; more complete preparation of the attack; more nothing but soldiers who exercise freely their initiative and courage. But we are promised the "*Golden age of generals.*" Our infantry did not fight otherwise at Alma, at Inkerman, at Magenta, at Solferino, and it was victorious. Unfortunately, events took on another color when the affair occurred with the Prussians in 1870.

At this time the bravery and initiative of the French soldier no longer sufficed, and in our army we were forced to believe that the commanders of all grades, when strong leaders, exercised a preponderant influence over the results of a battle.

After this war our corps of officers set to work with the hope of equaling, if not surpassing, its ancient adversaries; and thanks to its sustained efforts its progress has been patent even to the dullest. To-day, on the pretext that the second part of the South African war caused the adoption by the English of certain methods of fighting adapted to the exceptional conditions of battle, some wish to revolutionize our methods instead of perfecting them by evolution wisely conducted; they seem not to see that in acting thus they risk confusing the mind and causing a halt in the movement which has operated for fifteen years in favor of unity of doctrine.

Very happily nothing can prevail against common sense, and it will be with the theories of the author as with all purely theoretical products—the military organization will positively refuse to assimilate them, as it has always done.

The cavalry still remains the arm for rapid enveloping movements, pursuits, and the rear guard.

The author uses the term "rear guard," while he has a horror of the term "advance guard." Could it be that he found difficulty in obtaining the opposite of the word "screen" (rideau), which he affects so much?

> Its importance has been increased, but its mode of action has been completely changed. The time of great charges has passed. It was so already in 1870. Those made at the time on both the French and German sides resulted in nothing but useless hecatombs.

On the contrary, we think that the wars of the future will see great cavalry charges, even against infantry or artillery, and that the result of these charges will depend almost entirely on the bravery of the chiefs who command them.

In every battle one sees troops grow weak at some stage of the action. If at such a time a mass of cavalry could strike like a bird of prey infantry or artillery more or less demoralized or lacking ammunition, it would gather laurels without exposing itself to great danger.

What would have become of the infantry of the French Second Corps on August 16, 1870, when, after the loss of Vionville and Flavigny, it was forced by the German artillery fire to flee in disorder, if the German Sixth Division of Cavalry had found itself where it should have been and had charged at the proper time on the fugitives?

The Germans recognized the failings of their cavalry generals in 1870, and have made the greatest efforts for a long time to develop in their higher officers and generals the very rare qualities of a cavalry leader.

Even in 1870, despite the statement of the author, certain cavalry charges were not mere hecatombs. On August 16, Bredow's charge and that of the First Prussian Dragoon Guards completely attained the result sought; also, on the same day, the charges on the Yron Plateau were not useless, for they helped to stop the offensive action of the Ladmirault Corps, so dangerous for the German left wing.

> A troop of cavalry, even the smallest, can no longer appear in close order in the zone of artillery, and still less in the zone of infantry fire.

This was true in 1870; but the impossibility of cavalry remaining in range in sight of artillery or infantry did not hinder its use for proper purposes, which are to reconnoiter the enemy's flanks, protect the flanks of its own army, watch the large open intervals in the line, and take part in the action when an opportunity presents itself; the terrain of central Europe being more or less broken, there was no field of battle which did not offer masks capable of covering the cavalry units at a short distance behind the troops engaged.

The reconnaissance being stopped at a great distance by the long range and rapidity of a fire, the origin of which can not be told exactly, all that can be known is the points at which the enemy has not been found at a stated time.

Numerous reconnoitering bodies covering a large front, who receive a fire at long range without being able to return it effectively, not being able to determine its origin exactly, nevertheless mark the location and extent of the enemy's position, "coasting along his dangerous zone," to use the author's expression.

It has never entered anybody's head, even so far back as 1870, to allow the reconnaissance of cavalry to enter the meshes of a system of mixed outposts when the lattter are well posted.

It is in operating on the flanks of an enemy marching or in position that reconnaissances can hope, if they are well conducted, to get near enough to see strong columns or large camps.

But is it not of great importance to be able to coast along the dangerous zone of the whole extent of the line occupied either by the enemy's advance posts or by his main force?

Besides, this could not be accomplished except partially and by the use of great skill, if the enemy had a numerous and active cavalry keeping watch at a long distance around troops which it was charged with covering.

According to the author the reconnaissance which Captain Gilbert has called "negative" is the only one which in this day can produce precise reports. The assertion is inexact, considering that in 1870, despite the fear inspired by the *chassepot*—a rapid-fire, long-range weapon—the reconnaissances of the German cavalry, particularly from the 26th to the 31st of August, would often cut the line of march of the army of Chalons, locate its bivouacs, and furnish valuable reports to the General Staff.

It will be said in reply that the German cavalry had an easy task on account of the unlucky division of the French cavalry and its incapacity in the matter of reconnaissance. This is the truth, but in war the two adversaries are never equal, and the stronger or more skillful surpasses the other, without which there would be neither victor nor victory.

This failure of the cavalry to justify the hopes placed on it in reconnaissance was so absolute that the other troops ceased to look for any security from this arm.

The author handles sophism with an unexcelled dexterity. A short time ago he told us that "the reconnaissance was stopped at a great distance, and could only tell the points at which the enemy was not found."

Now he says that the failure of the cavalry "in reconnaissance" resulted in taking from the other troops all confidence in the "rôle of security" confided to this arm.

Failure of the cavalry.

The term is harsh, besides it applies only to English cavalry operating against Boers—all horsemen and all extraordinary riflemen.

Every time that European cavalry has found itself opposed to a nation of horsemen it has had to give over reconnaissance duty to small detachments. This was so with the French cavalry against the Cossacks in 1807, 1812, 1813, and 1814. It was so likewise in Algeria during the first years of the conquest, until the time that natives rallying to the cause of France formed flying columns and relieved our cavalry of the duty of reconnaissance.

The author then states that the English cavalry, discarding its lances and even its sabres, took its carbine and became mounted infantry. Much good this did it.

It would be necessary to see this cavalry operating in Europe according to the same principles. But we shall not see it, for the English have too good sense ever to do such a thing.

The artillery tried to combine the effect of their heavy guns and the rapid-fire pieces of the horse artillery. They sought to establish their batteries in a long line, making all their fire converge on a single point, so as to cause at the same time a direct and oblique fire.

The eyewitness whose notes we have analyzed says not a word of the artillery being established in a long line. On the contrary, he states that the batteries were established on the flanks when the advance guard operated at a long distance from the main body, and that the artillery went into action either in the wings or in the intervals between battalions when the infantry divisions were engaged.

On the other hand, the lessons that have been drawn from the South African war agree on the point that the English artillery, though always showing great bravery, often operated on its own account and in mass without appearing to suspect the existence of conditions which demanded on its part the preparation of an infantry attack.

The systematic division of forces, of which the author seems to be an ardent apostle, denotes in him and in his co-religionists a state of mind which was manifested in the conduct of military affairs at the time of the Terror.

The 14 armies of the Republic were deployed on the menaced frontiers (they were all menaced), which they covered in a cordon, and in each army of 20,000 to 35,000 men the troops were likewise in cordon.

To-day the screen replaces the cordon, but at bottom they are same thing—weakness throughout—and defeat insured, in case the enemy attacks at some single point chosen by him.

In truth, the armies of the first coalition showed themselves so pusillanimous and acted with such weakness that at that time the French barely escaped dismemberment.

> The results obtained with heavy projectiles charged with lyddite (melinite) were very poor.

That can be conceived, since the Boers never defended an inclosed area, being almost always hidden in deep trenches or behind rocks.

On the contrary, the effect of shrapnel was always formidable. To return to the language used by the author:

> The projectiles of the English artillery had only a small effect. "Our shrapnel frightened the Boers but did not kill them," wrote Lord Methuen; "their bullets lacked force."

In the quotations to follow, we can see more and more that the author has an imagination which causes him to take his own ideas for facts.

> The division of artillery has become the rule.

We have discussed this before.

> Every body of infantry, however small, ought to be accompanied by cavalry to open its way, and by artillery to protect its march.

On the field of battle in the second part of the South African war one does not find a trace of little columns of infantry accompanied by cavalry or artillery, for the author is speaking of action in battle.

It is different with flying columns, operating singly to subdue the country and pursue groups of partisans. In this case they should be made up of elements of the three arms.

The ancient axiom, "Fire draws fire," is now modified as follows: "Visibility draws fire."

Certainly. But this is mere play upon words.

The infantry can no longer fight except prone.

The necessity for infantry to lie down was already apparent in 1870–71.

The author then explains that for moving forward by crawling or by rushes the soldier should be without knapsack, his only equipment being the haversack, the individual mess kit, and the blanket roll.

At the battles of Spicheren, Wissemburg, Froeschwiller, Borny, Mars-la-Tour, and St. Privat, both French and Germans fought without knapsacks. The several patrols of the Prussian Fifth Corps made prisoner during the battle of Froeschwiller were provided with the haversack, had the cloak across the shoulder, supporting at its lower part the mess kit, and wore a cap, the helmet being suspended by its chin strap.

Whatever may be desired, hotly contested battles demand that the soldier shall be relieved of the heavy knapsack which he ordinarily carries.

Hence the necessity of a knapsack made in two parts, the one designed never to be removed from the soldier, the other susceptible of being loaded on the company wagons or some other vehicle.

The author desires for our infantry a cartridge bandolier, a khaki uniform, and for a headdress a soft hat, the color of the ground, with broad brim raised on the left side. He even wishes bone buttons.

The author very much approves of Lord Roberts arming the officers, even the captains, with rifles, and making their dress like their men's.

With regard to a gaudy headdress, it occurs to us that after the war of 1870–71 our infantry officers were unanimous in demanding that the red cap should be replaced by a blue one, on the ground that their men, when lying down as skirmishers, generally took the precaution to remove their caps, considered by them as too distinctly visible, and laid them by their sides.

In 1872 or 1873 boards were ordered convened to consider the question of replacing the red cap with the blue, and they considered a long time. We are still waiting for their decision.

The author has a horror for plumes, and does not hide his disdain for what he terms "military dandies."

The uniform of his dreams is no doubt composed of a blouse to hide the leanness or deformity of the body, and a broad-brimmed hat to shade the eyes.

Provided with this outfit deformed or ugly men need not envy their more fortunate brethren, for one and all are equally horrible.

Apropos, the "Voyage on the Rhine," by J. J. Weiss, contains a very amusing chapter which treats of the trials of an officer of Prussian hussars, and ends with the term "the unhappy hussar," something which would be truly a phenomenon in the French army of to-day.

Some years before the war of 1870 a certain ministry, perhaps very efficient, suppressed the élite companies, took the sabertache from the hussars, the patrol jacket from the cavalry and artillery, gave the dragoons the tunic, and disbanded the cavalry and artillery bands. It showed poor knowledge of human nature.

To bring their men on the line the officers made use of narrow formations, winding and deep. Often they used the Indian file because, they said, it is easier to make men follow their file leader than to direct themselves.

To our knowledge none of the works compiled from the words or writings of English officers who took part in the South African war have mentioned narrow formations or Indian file in approaching the firing point.

The English made their march of approach in successive lines of skirmishers and in no other way.

At 1,000 meters a rifle ball will penetrate four men placed one behind another.

This alone indicates that narrow formations or Indian file, though they may be permissible under long-range artillery fire, should not be used in a march exposed to musketry fire.

The invisibility of the enemy was a new factor, hitherto unprovided for in the scheme of instruction of combatants.

The Boers in their deep trenches were invisible at 1,000 meters. This is an undeniable fact. But our soldiers are provided, and have been for a long time, with smokeless powder, so that the slight visibility of the enemy at long and mean ranges has become familiar to them in maneuvers of opposing troops where blank cartridges were used.

With the power of acceleration of fire conferred by repeating arms a single man firing rapidly produces the same effect as ten men firing normally, and it is impossible to tell the difference.

This assertion shows what error imagination can give rise to when it is not aided by experience.

A soldier fires normally 6 or 7 shots a minute. According to the author the same soldier firing rapidly could fire 60 shots a minute, or one shot each second.

Now, it is a fact that by using the magazine or clip a skilled rifleman could fire a dozen shots a minute, and yet he would be out of ammunition after three or four minutes of such fire. All officers of infantry know that.

The author specifies the sticking to cover, and the tendency to remain stationary, as the two "great enemies which paralyze the action and weaken the courage of the combatant," and he adds:

"The moral education of the man and the technical education of the soldier are the two levers by which the combatant can be detached from cover and carried forward."

Would he have the moral education of the man distinct from the technical education of the soldier?

This would be a grave error of a psychological order. No: the soldier can not be made into twins.

He joins his regiment with qualities and faults, which he possesses by inheritance, and a little education, which he owes to his family and his teachers.

From the day he enters the service his commanders strive to develop his good qualities, correct his faults, and teach him, outside of the necessary technical knowledge, love for his flag, devotion to his comrades, confidence in his commanders, esprit de corps, emulation, and a desire to distinguish himself in war, even at the sacrifice of his life.

The conception of the combination citizen-soldier belongs to the domain of metaphysics. It haunts the brains of idealists, excited by a desire to found a social order purely rational, without taking into account heredity, traditions, and habits, which render every man the slave of the past.

The author then draws the reader into an extended discussion of tactics, seeking to show that England, due solely to the fact that it draws its nourishment from beyond its borders, is scarcely more powerful to-day than it was fifty years ago.

To prove this he says that with 240,000 English against 12,000 Boers these disproportionate forces were in equilibrium.

According to this, a Boer was equal to twenty English soldiers. This scarcely flatters "Tommy."

In truth, the article of the *Revue des Deux Mondes* should have been written before the conclusion of peace, at a time when the author believed the South African war would last forever.

But after the month of October, 1900, the campaign was virtually ended.

There follows a literary amplification of the old idea that in war "iron is as valuable as gold."

Returning to tactics, the author says:

> We must take into account the fact that the present arms carry to its highest point the action of skirmishers in a new form, in which each soldier must act independently, and in the fullness of his individual will to meet the enemy and destroy him.

This is a return to barbarism, pure and simple, with its hordes lacking organization, command, and discipline.

And that is the ideal he offers us. Many thanks!

The author then describes the difficulties experienced at present in making good soldiers on account of the increasing prosperity of the people and the extreme intellectual refinement of men, and he cites in support of his statements the Chinese soldier, contemptuous of death and slow in combat; but what he forgets to say is that the same Chinese soldier who fled disgracefully under fire when commanded by an ignorant mandarin becomes a very brave soldier when he comes under the orders of a good European commander.

To finish with the quotations from the author:

> Fear is an illness; like other illnesses it has its prevention. It consists (the prevention) in a methodical development of good physical qualities, of the will, and of energy, in the child and young man.
>
> According to this course of reasoning, the mother of a family first, and the schoolmaster afterwards, should exercise a true priestly influence. The regiment is powerless to bring forth these qualities.
>
> The spirit of sacrifice is not acquired by theories in the study. Officers can only develop by technical instruction, and by guarding against diminishing under the pretext of discipline, the initiative and individuality of the young man who has become a soldier.

Fear is not an ordinary illness; for, being often of ancestral origin, it is intimately connected with racial and family qualities.

Napoleon, who ought to know, wrote:

> Bravery is an innate quality; it can not be acquired.

Officers who have led men under fire for the first time remember their surprise at the bearing of certain soldiers, entirely different from what it was before. This bully drops from sight and that despised weakling shines in the first rank.

We do not mean by this that it is useless to develop force and address as well as energy and strength of will.

These qualities help to increase a man's courage by the self-confidence which they provoke; but they are powerless to manufacture courage when it is not present in the blood.

The education of physical powers, energy, and will can evidently be commenced at an early age to the great profit of the race.

In this respect English education ought to serve us as a model. But we are still far from it, despite the honorable attempts made recently in several directions by M. Demolins and his disciples.

As a matter of fact most French mothers spoil their children, and schoolmasters, outside of their purely book teaching, have a marked repugnance for anything which savors of physical force.

It is a merely utopian theory, the attributing actually to a mother or a schoolmaster the exercise of the priestly influence of which the author speaks.

Later, when the methods of education now in use are transformed entirely, we can hope for some success in the participation of the university in the development of physical powers and character in the child and young man.

The gymnastic and shooting clubs would exercise a salutary influence on the youth of the land if they were more numerous, or, above all, composed of better material; but the sons of the middle class disdain them, and the sons of the farmers care nothing for them.

Actually, there is no medium so favorable for the physical and moral education of young France as the regiment, on condition that the officers and noncommissioned officers are enthusiastic in their work and acquit themselves with the same zeal and competence that they attempt to inculcate in others.

The author refuses to the regiment all educative mission, and makes this sally:

> The spirit of sacrifice is not acquired by theories in the study.

Is the miserable method of theories in the study the only one he knows?

The last phrase of the quotation from the *Revue des Deux Mondes* strengthens the idea previously put forward by the author, under which the officer would be reduced to the simple rôle of technical instructor. It is no longer desired that the officer shall exercise over his command an overwhelming influence, that he shall be its head and its heart, and the schoolmaster is now to be depended upon to make men capable of braving death on the field of battle.

But we well know that a tactical unit is useless without its chiefs, and that these chiefs can not command it under fire except on condition that it has been welded together physically, morally, and technically in time of peace, and welded by themselves.

For thirty-five years it has been admitted in France that the master of the Prussian Military School gained the battle of Sadowa.

At the same time the idealogues, so numerous and so blatant in our country, conducted a campaign against what we now call militarism, saying that in case of war it would suffice, as in 1793, to strike the ground and armies would appear. To the discipline and automatic action of the Prussians they wished to oppose "intelligent bayonets" and "ramparts of muscle."

In spite of cultivating traditions one generation succeeds another without profiting by its experiences, so much so that entirely utopian theories condemned by facts reappear at fixed intervals and, far from being combated, meet a favorable reception from young men who are ignorant of a relatively recent past.

To recapitulate, the article of the *Revue des Deux Mondes* of June 15, leans on a great number of observations made during the South African war, some discreet, others contestable, in an attempt to destroy the tactical doctrines founded on the campaigns of Napoleon, and more recently on those of the Franco-Prussian war.

To these doctrines, almost perfect, the author opposes the "War of Screens," nourished by numerous small mixed columns.

His method is simplicity itself; for this reason it ought to find favor with the ignorant.

CONCLUSIONS.

Our own conclusions, drawn from the South African war, are a little different:

1. The almost complete absence of artillery on the Boer side, distorting the conditions of battle, prevents us from forming a precise idea of the appearance of action in a war between European powers.

For instance, the march of approach of the troops of the English second line would have been very difficult, one can almost say impossible, in the face of fire from numerous rapid-fire batteries of artillery.

2. The power of the present rifle increases the normal distance of infantry action to about 800 meters, in place of 400 meters, which it was in 1870, and 600 meters, which it would have been with the rifle model 1874.

3. The slight visibility of the enemy, resulting from the use of smokeless powder and the extended employment of field fortification, renders the approach very long and very laborious, with an increase of losses, and gives a much greater duration than formerly to engagements.

4. The power of the present armament causes the advance guards to be split up, before they are subjected to an effective artillery fire, into small parties destined to engage in the reconnoitering action, which spreads itself before the enemy's line and induces a wear-and-tear action over the entire front.

5. The nervous exhaustion present always, but taking place more quickly nowadays on account of the shorter duration of active service, the slight visibility of the enemy, and the high-power armament demands that the troops engaged shall be progressively nourished by the opportune and periodical arrival on the firing line of fresh troops in closely calculated numbers, and, on the other hand, that the troops not engaged shall be spared as much as possible from the depression caused by useless losses by taking cover from the view and fire of the enemy, by judicious employment of sheltering obstacles and the depressions of the ground.

6. The extended duration of battles, which will continue perhaps for several days, the necessity of nourishing the action along the entire front, and perhaps the relief, after 5 or 6 hours' fighting, of the troops actively engaged, lead us to

believe that the entire fighting front of an army corps should not exceed the dimensions allowed at present, which vary from 3 to 5 kilometers.

7. The division of fighting units, the imperious necessity for taking advantage of the slightest cover, and, lacking cover, of fighting prone; finally, the impossibility of officers exercising active command over their men by standing behind them, all result in requiring on the part of the individual skirmisher a stronger morale than formerly.

Soldiers in whom a good military education, developed by example, by exercise, and by discipline, has inculcated an absolute confidence in themselves, their comrades, and their leaders, these soldiers will fight well despite their isolation, and, if they should be killed, their death will cost the enemy dear.

On account of the powerful armament of the artillery and infantry, the front of a position has become almost inviolable throughout almost its whole extent; but a skillful general will be able to discover a zone of approach and a favorable position for assembling for the attack; or, better still, a feeble point in the enemy's line, which will be either a badly flanked salient in his front or a wing badly supported or difficult of protection.

The inviolability of the front of a position, even for forces sensibly superior to those defending it, causes the decision to be sought in a surprise attack, powerful, well prepared, and carried out against the point judged most favorable.

A strong surprise attack presupposes secret concentration, at a short distance from the point of attack, with a harmony of arrangements very superior to those which the enemy can have at this point.

The preparation is carried out by numerous skirmishers, taking advantage of cover toward the objective with the aid of numerous guns, which, after silencing the enemy's artillery, turn their fire on the enemy's infantry.

The execution is the last phase of the action. It consists of putting in motion the attacking mass, charged with following up in the interior of the position a previous success of the skirmishers, who have been progressively reenforced, and, with the aid of the artillery, have taken possession of the captured portion of the position.

We shall amplify the outline traced by us of the methods of decisive attack.

Captain Gilbert, whose death in October, 1901, was an irreparable loss to military art, left a work entitled "The South African War," and his conclusions, in which we concur, are as follows:

> Conducted in a theater and with means entirely different from those we should see in Central Europe, the South African war can evidently not throw a great light on the mysteries of future wars.
>
> Between these conflicts of great nations, from which the imagination recoils and the heroic resistance of a handful of peasants, the difference is even greater than that between the wars of the Vendée and those of the First Empire. The employment even of our perfected weapons was here on too small a scale and with too much inexperience: the statement of results is not yet sufficiently in documentary form for us to draw exact conclusions on elementary tactics.

During the years immediately following the war of 1870 the question of the action of approach of infantry in open country occupied, at least as fully as it does to-day, the officers of infantry, both French and German, who had taken part in the great battles of this war.

The scattered formations for traversing open spaces, the re-forming of units in the successive firing positions, and the means of acquiring a superiority of fire were the objects of experimental researches as numerous as they were varied.

These came to an end in France after the adoption of the regulations of 1875, and in Germany a year later when the regulations of 1876 appeared.

General Prince Hohenlohe-Ingelfingen states in one of his "Letters on Infantry" (1885) that among the experimental formations immediately after the war of 1870 for an attack over bare ground, the strangest dispositions could be found, among others the following:

> Each battalion covered entirely a square of 300 paces on each side, with files of two men each, and he adds, "It is only right to ask if in this case the '*general suave qui peut*' was not carried to the height of a principle."

The eminent author[a] of the work *New Order of Tactics*, published in the *Revue Militaire de l'Etranger* of October, 1874, sums up as follows the principles regarded as axioms in the German army of the time:

> The action of skirmishers, the dispersed order, call it what you will, is the only formation for infantry in action. The action of skirmishers opens, prepares, and decides the

---

[a] Captain Cardot, since made a general officer, as all know. The "New Order of Tactics" was the subject of three articles appearing in the numbers for October 6, October 16, and November 16, 1874.

result of the action. The attack on the enemy's continuous line is no longer possible except by successive approaches and by the aid of a fire more and more nourished and without sensible intermittence.

The skirmishers advance by fractions, with successive short rushes at full speed, taking cover or lying flat: they are followed, reenforced, and sustained by the other fractions of the advance line,[a] which employs like methods in advancing.

The main body of the battalion conforms to the movement, dividing up and taking open order if the intensity of the enemy's fire or the configuration of the ground renders this necessary.

And the author concludes:

It is for the French officers that we must resume in a short space the principles so often stated in this work:

The *law* of modern warfare is the indissoluble alliance of fire and the offensive; in other terms, shock action and fire action, the intimate mixture, the incessant alternation of the advance and the fire of musketry in all its forms.

The *expression* of this law, its *manifestation*, is the action of skirmishers, the dispersed order, the individual order: the name is of no importance.

The *model*, if one is necessary, is the company column, or, more exactly, the system of subunits of the battalion.

The *characteristic* is individuality.

In 1874 the vivid remembrance of checks given four years before to infantry attacks insufficiently prepared by fire, dictated methods of attack identical with those which the South African war seems to have brought forth, and these methods were applied in France by the regulations of June 12, 1875, which were replaced by those of July 29, 1884.

But armies require from time to time a whipping to wake them up, otherwise they allow themselves to glide down the incline which leads to indifference, and to the loss, little by little, of a true knowledge of war.

In default of campaigns to stimulate their energy, armies which have slept long in the delights of peace find an excitant in every murderous war which takes place abroad, and it is thus that the Russo-Turkish war of 1878, and more recently the South African war, have furnished an occasion for the armies of Western Europe to renew their vigor and to a certain extent to find a new field for their warlike activity.

Under this head the articles appearing last year in Germany, and devoted to the lessons that can be drawn from the late South African war, are very interesting. We shall give them a passing glance.

---

[a] In Germany, in a battalion in action, the "advance line" is the line formed by the companies called in France the "first line;" and the "principal line" is that formed by the companies called in France the "second line."

The first in date of these publications is the lecture given March 5, 1902, in Berlin by Lieutenant-Colonel Lindenau, chief of a section of the Prussian General Staff.

The author considers especially the methods of infantry attack over open ground as influenced by the lessons of the South African war, and he sums up in these words:

> If we take a general view of the infantry attack as exemplified in the South African war, we see that every attempt to carry out an attack by regular or mechanical movements failed utterly.
>
> The attack never progressed surely unless sustained by an incessant fire and patiently conducted from firing point to firing point. In the Transvaal, whenever firing positions could not be found, the attack over open country received a check. It was necessary in this case either to construct cover under the protection of darkness with the intrenching tool, or to remain motionless while awaiting a success in some more favorable portion of the terrain.
>
> The Boer war showed what too precipitous attacks can lead to with our present armament. We must not imitate the English, who attacked the Boers more often with their feet than with their guns.

And Lieutenant-Colonel Lindenau concludes:

> More than ever the infantry attack of the future will, in all its phases, have more of an individual character.
>
> Sometimes rushing forward, sometimes lying down and motionless, sometimes walking, sometimes running, but ceaselessly utilizing cover afforded by the terrane, the assailant will advance, little by little, sustained by fire from chosen points of vantage and from well organized wings. They will often have to fight motionless for hours at a time in order to obtain a superiority of fire * * *.
>
> It will be due to an unshakable tenacity and perseverance rather than to a division into disorganized powder that the attack will progress, and it will progress so much the better if everything has been prepared calmly and methodically * * *.
>
> In the future, as in the past, the attack of infantry endowed with immense destructive force will remain generally the surest means of gathering the laurels of victory.

The preceding remarks are not unjustifiable, but they savor too much of pure theory, and do not take into account the necessary considerations of tactical requirements and unity of action.

General de Scherf, well known for his philosophical and military works, replied to Lieutenant-Colonel Lindenau in a brochure entitled *Ensemble or Individualism in Attack.*

General de Scherf is an upholder of the normal methods of attack. In this respect he goes a little too far, considering that, in a general way, the dispositions for decisive attack that can be made by a certain unit are not extremely varied on account of the narrow conditions that must be fulfilled by every attack which is sent with a rush against the enemy, in order to make it move with éclat.

But there is little agreement on this subject, because every man's point of view differs from that of his neighbor.

In our opinion the division of the attacking troops might be carried as far as desired, provided the mass of troops destined to enlarge the breach and convert a partial success into a victory shall be formed compactly ready to maneuver or deploy, as the case may be.

General de Stieler, in the *Jahrbucher* for October 1902, is less exclusive than General de Scherf, but he wishes to put young officers on their guard against becoming enamored of methods of attack which are too artificial.

Here are some of his observations:

> What causes us to go endlessly astray on the events of the Boer war is that we ignore the psychology of battle.
>
> Neither the targets nor the marksmen at Spandau (Prussian Normal School for Target Practice), any more than the Boers in the Transvaal, give a psychologically correct impression.
>
> If the targets returned the fire, the per cent of hits would be considerably lowered; and if the Boers, hidden in their trenches, and only slightly disturbed by the enemy's fire, had been compelled to suffer stronger moral impressions, the English, despite their formations, would not have had to suffer such considerable losses.
>
> One is forced to the conclusion that in battle the best method of taking cover is not found in the terrain nor in complicated formations.
>
> The best cover is in the *conduct of fire*.
>
> We must make sure of a superiority of fire, without which we can not advance any better than the English.
>
> It is with the *tactics of fire* that we must work.
>
> The "Boer tactics" caused a loss of precious time, with all its consequences.
>
> The troops are divided into infinitely small parts, these molecules are divided still farther, one is pushed forward, the other held back, the voice of the commander is heard, the units are intermixed with each other, the command is given, the troops leave cover and throw themselves forward.
>
> This is not war.
>
> Those who have made war know that the officer has the greatest difficulty in getting his men away from even the smallest shelter and carrying them forward.
>
> In an army of a million men who have never before taken part in a war, there are nothing but heroes in the rough. The most ardent patriotism often has need of discipline when it becomes a question of playing with death.
>
> Discipline, cohesion, and marksmanship, alone will take us into the enemy's ranks.

General de Steiler then goes on to show that on the field of battle all blows do not come from the front, and that certain formations, only slightly vulnerable when projectiles are directed against them from the normal direction, become very dangerous when attacked on the flank.

General de Steiler's conclusion is that on the field of battle, when bullets are whizzing past the head, one can not make an advance except with troops well in hand and strongly commanded.

There appeared in July, 1902, an anonymous article entitled *Action of German infantry*, as determined by the experience gained at Döberitz, near Berlin, in 1902.

The author begins by establishing the fact that in open country the troops of the first line advancing against an enemy in position ought to employ formations and methods which will enable them to arrive with minimum losses at the first firing position, chosen at 500 to 800 meters from the enemy.

To this end he recommends, even at long ranges, chains of skirmishers with 8 to 12 meters interval, moving by squads, which execute rushes of 20 to 30 meters, even on all fours, carrying the rifle by the sling in the teeth.

The author then gives a system of instruction in this method for the man, the file, the squad, the platoon, and the company.

The squad which arrives first at the initial firing position takes cover and waits till it is joined by the other squads of the platoon, when the chief of platoon gives the commands for firing.[a]

During the approach to the first firing position the squads, echeloned from front to rear, ought not to execute their rushes at the same time.

The supports employ similar methods in reaching positions which correspond to the first firing position.

Before the engagement the superior officers and captains ride rapidly to a point favorable for observation, and while making their observations use "Apache" methods to keep from being seen.

If the terrain offers ways favoring the march of approach they are utilized by modifying the formations to suit the ground.

At the proper time successive firing positions toward the enemy are occupied by the same methods, the groups remaining in rear protecting by their fire those which have moved forward.

The author bases his conclusions on a certain number of maneuvers, which he describes with care.

These maneuvers, participated in by the author and taking place at Döberitz in May, 1902, seem to have been fully reviewed and corrected, but their greatest value is in view of the tendencies which they exemplify.

In a final analysis the author shows that he sees no necessity for revising the regulations. He limits himself to interpreting them with regard to the elasticity of the elements of the first line, submitted to a musketry fire in an open country while gaining the first firing position, and later, after a superiority of fire is gained, in moving to the successive firing positions toward the enemy, the last of which marks the line of departure of the direct attack on the enemy's position.

---

[a] The Prussian company is divided into three platoons, each commanded by an officer.

The ideas of the author, though finding certain favor with the German military public, were opposed by some publications, among them the *Militär Wochenblatt*, which, in its number for September 13, 1902, criticises, over the signature of Major Hurt:

1. The advance by rushes, executed by squads.
2. The dispersion of the supports.

This criticism is not lacking in justice, for the system extolled by the anonymous author of *German infantry in 1902* for carrying out the advance of the first line in open country and under musketry fire seems more theoretical than practical in actual war.

To sum up, the researches and experiences of last year in Germany, with regard to the modifications which the lessons of the South African war are susceptible of making in the present tactics, agree unanimously in maintaining the present regulations on the subject; but they have resulted in exciting the intellectual activity of the officers, and leading them to choose, in each particular case, the most appropriate dispositions for attaining the desired result with a minimum of losses and without abandoning a morsel of their command over their troops, which is an essential condition of unity of action, and is the key to success in war.

To-day, in France; opinions on tactical methods are more divided than elsewhere, and form two distinct currents of ideas.

On one side the tacticians of the historical school, much the more numerous, remain faithful to the traditions of the Napoleonic wars, laboriously reconstructed in our army after the events of 1870–71, and analyze the events of recent wars with a view to modifying the present tactics as required by the increasing power of armament.

On the other hand, the tacticians of the rational school, who make up for their lack of numbers by an ardor somewhat noisy, wish to revolutionize the present tactics, or rather abolish them entirely, and substitute a system of tactics entirely new, which they call "the tactics of the future."

Revolution is a synonym for violent remedy, capable of killing the invalid, and its use is not justified except in desperate cases.

The present system of tactics is far from requiring such treatment.

THE GERMAN INFANTRY REGULATIONS AS TESTED BY THE EXPERIENCES OF THE BOER WAR.

Translated from La France Militaire (June, 1904) for the Second Division, General Staff, by First Lieut. S. M. DE LOFFRE, Assistant Surgeon, U. S. Army.

A very interesting study due to Lieutenant von Gentz, of the Second Lorraine Infantry, No. 131, has just appeared in the *Militär Wochenblatt*. It is entitled: "Do the Lessons of the South African War Authorize us to Modify our Infantry Tactics?"[a] We give below the translation.

Rarely in its time has a campaign so greatly aroused the interest of all civilized nations as the South African war has done. Although this interest seems actually lessened by reason of the South-west African war and the war in the extreme Orient, and although we may hope to see certain tactical questions cleared up in the Russo-Japanese war, nevertheless the observations of an officer who took part in the Transvaal war are still valuable to-day.[b]

Even to the military world, this last war has offered, outside of political events, much that is new, and numerous facts deserving attention, but it has also given rise to many problems whose solution is not yet known.

The partisans of the militia in Europe have followed with intense interest the campaign in the Transvaal, which, from the beginning, seemed to produce many arguments in favor of their theories.

To any casual observer of events it seemed to be clearly proven that, in this particular case, an army composed of militia could be used in war and could be of service. The adversaries of the militia had, for a short time, as their only argument against this demonstration brought about by the

---

[a] Lieutenant von Gentz was present with the Boer forces during the war.

[b] This article was written before the battle on the Yalu.

Transvaal campaign, this one confirmation: The mercenary English army could not be compared to an European army having the present organization. These two ways of thinking were as false, one as the other. They were due to a complete ignorance of the true conditions of war in this theater of operations. On the one hand the English troops were not even of ordinary worth (impartial military critics agree on this subject); on the other hand, the victories of the Boers were not in any way a striking proof of the value, in war, of militia, whose worth was not manifested in a first outburst of exalted patriotism, but was rather belied by a long-drawn out and difficult war comprising many hardships. And the reverses sustained by the Boer army will occur to every army composed of militia.

The reasons for the first successes of the Boers, which caused great surprise but did not keep up, naturally, and which led to so many false conclusions, were the following:

I. The mountainous nature of the country, very difficult, offering all the advantages to the defender and unfavorable to the invading army, especially for its artillery.

II. The fact that the Boers held themselves nearly always on the defensive, even when on the strategical offensive, whereas the English were always attacking, often with an insufficient numerical superiority.

III. The initial mistakes made by the English.

IV. Finally, the advantage the Boers had of being acclimated, and of having opposed to them adversaries—officers and soldiers—little acquainted with the nature of the country or the geography of the theatre of operations.

Nevertheless, in Germany they did not fail to make "much ado about nothing," and to demand a premature modification of the tactics, up to the time when the invalid suppositions on which the partisans of reform dwelt were irrefutably brought to light.

On account of the numerous factors put into play, with which we would not have to contend in Europe it was especially difficult, in this South African war, to appreciate fully the value of the operations and successes of both sides. It is not so easy as one thinks, even for those who were able to form an opinion on the ground itself from what they saw and went through, to adapt their conclusions and observations to our army, in equal proportions. Having said this, I here propose to take up again the following points, which are nothing else than the reproduction of my particular impressions and ideas, maybe without value, but personal.

I wish first to answer the questions asked in the title of my subject. To the attentive and educated observer of military matters, the South African war only taught one lesson. In almost all cases, the application of the tactical rules of our German regulations would have been perfect, and the best adapted to the purposes in view; it would have assured, more than any other, numerous successes.

If the teachings of war seem to demand a modification of our tactics, it is especially on account of the habits contracted during drills. It is only in very rare cases that these lessons are at variance with our regulations governing maneuvers.

The enormous and surprising effects of small-caliber fire on the attacking infantry, which were manifested for the first time by the attacks of the English infantry, and the insurmountable difficulties met with in these attacks against an adversary armed with modern weapons; the fact that in the attacks of the English infantry they failed to apply the principles laid down for attacks in the German maneuvers and that these attacks were more often made in schematic formations, similar to those we may see applied on our drill grounds—all these circumstances, I say, served as a demonstration of our tactical principles, now in use, for infantry attacks, taking into account the several factors of modern warfare. This demonstration is an unquestionable proof today of the excellence of our regulations governing warfare.

Some military writers go so far in their estimation of the importance of rapid-fire guns that they declare that a front attack on level ground is in all cases impossible, and they base their opinion on the reverses sustained by the English in the Transvaal. But before the experiences of the South African war we already knew (and the regulations read so in large type) that no one could dream of making an attack on open ground unless he had obtained the superiority of fire. This can only be obtained in war after several hours of fighting, often after several days; moreover, no one ignores it, as is shown by the impossibility of carrying out an action of such length at the time of our exercises of instruction.

Contrary to our regulations, which make the effect of the fire the principal object, the old English regulations, which were still in force during the war, read: "The advance must be made as quickly as possible, as the bayonet charge is the chief object in view."[a]

This antiquated tendency, long since dropped by the continental armies of Europe, manifested itself very frequently with the English in the Transvaal, and they often sought the outcome of the attack in battle by hand-to-hand encounters, without having first sufficiently prepared for this attack by fire, either by infantry or artillery fire. And this was one of the chief causes of defeat for the English infantry, in spite of their having borrowed the formations from our regulations.

At Potgietersdrift, on the Tugela (from the 5th to the 8th of February, 1900), for instance, we had only 5 or 6 deaths and an insignificant number of wounded, after a bombardment which lasted 3 days from sunrise to sunset, of our infantry positions, reinforced only by about 5 pieces and executed by about 50 English guns. Such meager results could not be considered as having acquired a superiority of fire. On February 5 and 6, same result. As soon as our weak artillery momentarily ceased firing in the face of the strong English artillery fire, the English, believing that our guns were dismantled, would advance their infantry to the attack. During these 2 days the English infantry attack was repulsed all along the line by our artillery fire, weakened, but from new positions on the battlefield, before the infantry lines could come within range for small-arm fire. The assault of February 6 on the southernmost spur of the Vaalkranz was only partially successful, which could not affect the real outcome of the battle. This also happened on other battlefields.

As to what concerns two of the special formations of frontal attack, as indicated in articles 76 and 82 of the Regulations for Maneuvers, the South African war furnished examples which favor their employment. I mean examples of night attacks—that is to say, a renewal of the first part of the attack under cover of darkness and the beginning of a surprise in order to obtain the superiority of fire at the break of day.

---

[a] The new English regulations, adopted after the Transvaal war, state that the importance of the fire is greater.

The English, who alone, in my opinion, are concerned in the discussion of offensive tactics in the Transvaal war, often had recourse to this procedure. When it was not followed by success, it was because they made other mistakes. In the battle of Spion Kop, for example (on the night of the 23d–24th of January, 1900), the daring night attack of Woodgate's brigade against our fortified position on Spion Kop succeeded in capturing from the Boers the key to their position almost without firing a shot, in spite of the great difficulties which the attacking force had to surmount. There, as is often the case, the defeat of the Boers was due to the tardy arrival and the small number of the reserve troops. Whoever took part in the terrible battle of January 24, fought between two skirmish lines lying only about 300 meters from each other, well knows how the result of the fight hung for many hours by a slender thread. On the night of the 24th–25th of January, during which Spion Kop was evacuated by both armies, we did not even know the final result of the battle and only learned it on the morning of the 25th. For some extraordinary reason the new English regulations make no allusion to the possibility of an attack of this nature under cover of darkness. The English attacks, in brief, have only clearly proven one thing: If the difficulties of the terrain or other causes do not necessitate a preliminary skirmish to obtain superiority of fire, as was often the case in the Transvaal, the advance during the day by a frontal attack to actual collision is an impossibility. We did not need the South African war to teach us this lesson, which is contained, as is commonly known, in that part of our regulations relating to attacks.

THIN OR DENSE LINES?

The Boer war particularly has brought to trial this much-discussed question, "Thin or dense lines?" which has started a lively controversy among military writers—a question upon which they are still far from agreeing. The chief point in this question is to bring the firing line up to the enemy with as few losses as possible. The advantages and disadvantages of thin and dense lines are numerous and balance each other pretty well. What the attacking force gains by advancing in a thin line to diminish its losses, it loses again by lessening the effectiveness of the fire that would result from dense lines. This fact, which was clearly proven every day during the South African war, will lead us to use thin lines as a general rule in the first deployment, at long distances, in the combat position from which the fire can reach its greatest efficiency: also in the advance of the support, in combats where the object is to allow the real attack to make its dispositions; in brief, in all cases where there is no primordial reason for giving the maximum development to the effectiveness of the fire. In contrary cases it will be impossible to escape the necessity of manning, with guns, this position where we wish to acquire the superiority of fire, and we will do this in all the limited and available space, without an afterthought, and without letting ourselves be influenced by other circumstances. So then it should be thin or dense lines, according to the purpose of the fight or the tactical situation imposed by the terrain or by circumstances.

If the English, as a result of their experience in the late war, lay down the rule to-day that only thin lines should be used in fighting with rapid-fire guns, they defeat their object, in my opinion, and make the same mistakes that the Austrians did in 1859.

Their losses, during the latter part of the war, were due partly to the wrong teachings they drew from former battles: Thin lines under all circumstances. We find an example of this in an attack made by the English on February 5 on the Waalkranz positions (Tugela), where part of the thin line, marching with wide intervals successfully advanced without any serious loss to the position held by the Boers; but, in the latter part of the fight, on account of the lack of density of their skirmish lines, not receiving the proper support from the rear, they did not have the proper effectiveness of fire to profit by their successful start against the part of the positions that were still intact.

The answer to the question of thin or dense skirmish lines, given by the teachings of the South African war offers nothing new. Our maneuver regulations are very clear on this subject (first part, article 123; second part, articles 22, 23, 24, 25, 29, 65, 90, 91).

POSITIONS WHENCE THE FIRE WILL OBTAIN ITS GREATEST EFFECTIVENESS.

As to what concerns fire action—although we must take into account the more extended view, due to the clearness of the air in Africa and favoring fire at a greater distance—the modern rifle should urge us, even under the conditions in which battles will be fought in future in Europe, to seek for a decision by fire at greater distances than those that the usual maneuvering grounds have accustomed us to up to this day. We used to admit as rules, in our exercises, that we must not open fire in offensive operations at more than 800 meters, and when on the defensive at more than 1,000 meters. The great effectiveness of the fire of the Boer infantry, often at 800 to 1,000 meters, has led us to advance the time for opening fire as well as the position chosen to give to the fire its greatest intensity; to use our guns at longer ranges, and to increase our target practice, which has made so much progress during the past ten years; finally, to give more time to open order-drills. Thin skirmish lines deployed to large intervals, the opening of fire at greater distances, the necessity of not exposing on the battlefield any force in close order, frequent dashes from rear to front of thin skirmish lines, advancing by rushes, plentifully supplied with ammunition, and giving an impulse to the firing line up to the last position of the line; such will be the character of offensive operations in future on open ground. There is nothing in these principles contrary to the spirit of the regulations, which prescribe, moreover, that all normal formations should be abandoned, without hesitation, if circumstances demand it.

TACTICAL DEDUCTIONS FROM THE BOER WAR AND THE GROUP ATTACK.[a]

By A. von Boguslawski, Lieutenant-General, Unattached.

Translated from the German for the Second Division, General Staff, U. S. Army, by Capt. Fredrik L. Knudsen, Eighth Infantry.

INTRODUCTION.

The elements of battle-leading on a large scale are just as unchangeable as those of strategy. The information, preparation of the battle, the direction of the attack, the use of localities, the keeping back of reserves, the direction of masses on the decisive point, the turning movement, the breaking through, and the counterstroke at the proper moment, all play their rôles, and so it will be in the future. All these important matters were the same under Cæsar and Hannibal as under Frederick, Moltke, and Napoleon.

The spiritual agents, which constitute the inner value, as on the other hand, the weaknesses of the troops, will likewise remain the same. The psychological influence will often be forced into the background during a long period of peace, and its observation will be neglected.

But the changes in war material will bring about many changes in the fighting methods of individual organizations, and these influence one another. The art of employing troops will likewise be influenced by the tactics of the organizations.

There are consequently periods in which some point of the fundamental principles is more prominent and another more obscure. In this case the nature of nations, as regards temperament and character, has also an influence.

A direct attack will be attempted against the badly trained and imperfectly disciplined troops coming from a decayed nation, while against another enemy the turning movement must be resorted to.

---

[a] *Taktische Folgerungen aus dem Burenkriege und der Gruppenangriff.* By Lieutenant-General A. von Boguslawski. Published by R. Eisenschmidt (Berlin, 1903), publishers of military literature.

The cooperation of the different arms, whether in large or small units, is one of the conditions for effect in war. No arm can dispense with another; there are always moments in which now one, now another, will make itself more felt; one should therefore not be neglected at the expense of another. This applies not only to the organization, training, and armament, but also to the estimation they enjoy from the authorities and in the eyes of the people.

But notwithstanding this, the principal rôle in action will always fall to the infantry, as it can be used in any manner and is unhindered by localities, unless it be deep water and perpendicular mountain sides.

For this reason and because the tactics of infantry presents the greatest difficulties in its application, the commanders of armies, and with them military literature, have occupied themselves continually, since the introduction of the breechloader and the improvements in weapons following thereon, in trying to discover the best form for that feature of infantry tactics which has again become the most difficult—the attack.

It was many times believed that a certain conclusion had been arrived at, when the war in South Africa, from 1899–1902, produced opinions which found expression in experiments that have taken place lately. The object of this book is to express our opinion concerning this. Let us first, however, review briefly the development of the tactics of the German infantry since the wars of the Great Emperor.

I. CHANGES AND OPINIONS FROM 1871 TO 1901.

The very large losses of the Germans in their attacks in the August battles of the great war, lead, just as now the experiences of the Boer war, to the study of how to avoid them; and its attainment was attempted—just as at the present again—by altered formations. Pursuant to the correct idea, the dispersed order of fighting which had decided 1870–71, of giving a greater extension, "strong skirmish lines" were pointed out as answering the purpose. To form these, even whole platoons were to be used. (Cabinet order of July 4, 1872.)

The supports may follow the skirmish line, not only in line or in column, but also in ranks and dispersed order, with groups in close or extended order.

The advance by rushes was introduced. The rushes were to be 50 to 80 paces.

It is this that is of special interest to us in that Cabinet order at the present time. These formations were practiced experimentally; but the practical, war-accustomed eye of the Great Emperor perceived at once the uselessness of supports in extended order and in ranks, as also the dangers which these formations would entail, namely, the firing on the real skirmish line from the rear, and the disproportionate breaking up into atoms covering the whole battlefield.

In the cabinet order of April 13, 1873, the Emperor rejected the artificial extension of the supports and the rank formation—which also made difficult the supervision and influence of the officers in action—and allowed the latter formation only quite exceptionally.

The rushes were fixed at 50 to 60 paces. The proper idea of war and the consideration of the morale had consequently carried off the victory.

On the other hand, the authorities were not able to make up their minds to adapt the regulations entirely to the new requirements, and therefore they retained the battalion columns and lines, deployments from column, the third rank, etc., which had been declared in the selfsame cabinet order to be useless for infantry action in the first place. The regulations, however, gave such great latitude that the war training continued to progress gradually.

A new impulse was given thereto by the constantly more rapid evolution of the technique of firearms, increased penetration and range, flat trajectory, the introduction of the magazine rifle and smokeless powder. Special care was given to fire discipline, and it was for a long time believed that this was to be attained by designating a certain number of cartridges.

Troops in close order were, to be sure, still made to fire impossible volleys, but strong swarms of skirmishers were considered the principal means for fighting.

In 1877 the scientific firing instructions of Mieg was distributed to the army, at first as an anonymous work. Although it did not on the whole bring anything new, it was a valuable contribution to the science of firing; but as it advocated long-range and volley firing, both were used to excess for a while. However, after a hot literary controversy, a reaction soon set in against these exaggerations. Improvements in the rifle were certainly taken into account, but a return was made to the principle of opening fire, especially in the attack. at the shortest possible ranges and acknowledging the skirmish fire as the principal kind of fire.

The extended-order fighting had taken firmer root, but the training was still made difficult by the practice of formations which would be impossible under the present fighting conditions.

Then, while excellent regulations for the performance of field service were issued in the period from 1872 to 1888, new drill regulations first appeared in 1888.

These extracted the quintessence of the experience derived from 1870–71, the maneuvers and the opinions advanced in military literature—yes, many paragraphs from the books that treated of tactics were adopted word for word in the regulations.

It does not seem necessary for our purpose to analyze here the regulations, since they are certainly known to our readers. The readers that belong to other arms are also sufficiently informed as to the infantry formations and its fighting methods. We point out only that the regulations, in II, 82, give general principles for the carrying out of the attack. wherein the strong swarms of skirmishers that are necessary are expressly emphasized. The unity of the attack, through the order of the highest commander for the assault, is pointed out as especially desirable. The regulations prohibit expressly any method of procedure which goes beyond the principles laid down in the above-mentioned part. We shall not again here make this much-disputed theme the subject of discussion—whether the regulations would not have done better to give some more explicit rules for carrying out the attack—since we must revert to them when considering the so-called new tactics of the attack.

Another important part of the regulations are the rules which have been designated by the name "task system." It arose from the cogency of guaranteeing the initiative of the subordinate leaders and avoiding superfluous and harmful interference with subordinate leaders. This is quite well in itself, and there are certainly many situations in which the assigning of individual tasks is necessary, but also, especially in great actions, such in which the simplest command is sufficient for a subordinate organization or troops, in order to direct it and make it act effectively. The regulations would have done well to emphasize this strongly, because it can not be denied that an exaggeration of the "task system" may cause a breaking up of the forces and a faulty cooperation. As valuable as the initiative of the subordinate leader is, it can, however, manifest itself only exceptionally in large operations of war.[a]

It is also to be mentioned that the regulations emphasize strongly the influence which is to be exerted on the mind and the development of the soldier's character during his training, that there are further some brief principles where the soldier will be shown the moral factors which have a decisive influence in action.[b]

The regulations finally emphasize quite decidedly that the mixing up of organizations is to be avoided as much as possible, but that if this can not be prevented the troops must also know how to fight in intermingled units, in close or extended order, in unformed ranks, or with an inverted front.

The regulations, based upon great experiences in war, are certainly adapted to the freeing of the infantry training from its bonds and to advancing it. But it was not unnatural that the continually progressive improvement of the artillery and the rifle, and furthermore the consideration of isolated war incidents, such as those of the Russo-Turkish war of 1877-78, did not permit the discussion of infantry tactics to cease. The results of the extraordinarily improved firing exercises on the terrain and on the maneuver grounds contributed thereto, and, as always in time of peace, incorrect conclusions for real fighting were often drawn from their results. Excellent works on the science of firing were written by reason of these exercises, but they also often caused a proneness to ascribe a too great influence to the technical and ballistic elements in the consideration of fighting conditions, and to neglect too much the tactical side and psychological influences.

---

[a] This will also be reverted to later on.

[b] We have already done this before in our small works, "Training and Inspection," and "The Conduct of the Infantry Soldier in Action."

The results thereof were propositions which recommended an instantaneous and very considerable extension of front. in order to bring about at once and as much as possible an overlapping by employing very dense skirmish lines through which a decrease of depth took place of itself. Opposed to this method was, above all, the consideration that in great battles an extension will take place which will make superior leading, so difficult in itself, still more difficult.

In the second place, the demand for artificial formations, like those which had been thrown overboard in 1872, was made again, and all that was justified by the increased fire effect of infantry and artillery. The extension of the ranges found once more its advocates.

From all this proceeded the proposition that the decision in the attack is to be sought only and solely in the overlapping and superiority of the attacker. The fire fight was to be the decisive feature. Many went so far as to declare an attack over open ground impossible.

To this was also added the opinion of a high ranking officer that the decision by means of superiority of fire was to be sought only through proper change from strategical to tactical methods; that is to say, by means of a convenient advance of several columns, which would concentrate their fire on the battlefield.

This is certainly a very favorable condition when it is brought about, but it can not deliver us from seeking a tactical method for the frontal attack, which may also many a time be necessary in the case of great turning movements.

The opinion was also advanced that a kind of a siege method would be resorted to and that recourse must be had to the night for intrenching. Without wanting to press the concrete case I am, however, of the opinion that it has been the endeavor of every great leader, and will also be so in the future, to end a battle in one day if this is at all possible. Military history shows us that this has many times been impossible.

The advocates of this method advance the quite general proposition that the defense has again obtained a considerably greater strength through the new weapons. This proposition is not to be accepted unconditionally, at any rate not in its entirety, because the new weapons increase the strength of the attacker in the same proportion as that of the defender. The defender had also the undisputed advantage with the oldest blunderbusses of being able to use his weapons more steadily and effectively, when he was in a position prepared beforehand, or even intrenched, than the attaker who was more or less in motion. The same is evidently the case at the present time. But to what extent will the condition have changed when the weapons are approximately equal on both sides? In the preparation of the action, in the stationary fire fight, which is a characteristic feature of the present action, finally, in the rapid fire, which is made to precede the decisive assault, the prospects of the attacker are just the same as formerly. The new weapon will give to the defender a continued greater superiority, if the attacker does not understand how to use his own weapon, or if he attacks unskillfully. As manifestations of unskillfulness may be mentioned, first of all, faulty formations; then a defective use of the ground and insufficient fire preparation. It is also natural to include in the proper use of the ground, in a negative sense, the avoidance of open ground for the attack when other roads and fields of attack are at disposal.

But there is at any rate one condition which must not be left out of consideration, and that is the time during which the attacker advances without firing, whether it be to the last assault or for making the so-called rushes, or, finally, to bring forward reenforcements. Here the rapidity of the fire and the flat trajectory exact their right and produce in a short time enormous losses, which have a shattering effect, to which I have always called attention. The art of attacking will now consist in not firing prematurely, even if the same effect as that of the defender can not be obtained.

The superiority of the defender's fire at this moment can never be fully compensated for, provided the defender still holds out or is present. There is nevertheless a means, unjustly scorned, for weakening the effect of the defender's fire as much as possible in the last stages of the attack, and not remaining defenseless oneself.[a]

---

[a] I will establish my opinion more firmly in the proper place.

But we oppose quite determinedly the opinion advanced that the proper means is found in the application of the rules for fortress warfare to field warfare, in order to compensate for the ostensibly acquired superiority of the defense.

It has been desired to show the possibility of working with intrenching tools toward the enemy's position during the night, by means of examples from the maneuvers. Yes; much can be proved by maneuvers. In the examples cited, the task of intrenching at about 450 meters from the enemy's position is really performed wonderfully well.

But I ask: "Where is the enemy who is so accommodating in war? Where is the enemy who would not have posts and patrols at a few hundred meters in front of his position, who would not at once attempt, on receiving their report, to drive away the workmen with volleys or rapid fire and by means of a sortie? To be sure, if it is supposed that the defender has inclosed his position with wire entanglements in such a manner that he can move out therefrom in a narrow front only, he has indeed prepared himself for a passive defense and can keep the enemy away with fire only. The details of field warfare are, however, different from those of fortress warfare. The besieged is, in the first place, not able to disturb the besieger, when the first infantry position is constructed—which will, however, not be situated at 450 meters, but between 800 and 1,000 meters—to the same extent by a sortie on an extended front, as a sensible defender who has not condemned himself can do effectively, because the defender of a fortress must certainly traverse, to a greater or smaller extent, a defile when he sallies out. But if the besieger succeeds in approaching to 450 meters to throw up the second infantry position, the front of the fortress in question must be so shattered that nothing much can any longer be expected from it.

These proceedings can therefore not be applied to field warfare as methods to be used everywhere, and we believe that we have established our plainly expressed opinion that intrenching at this distance in front of the hostile position will only lead to resultless, exhausting night fighting and will make part of the troops useless for the next day.

I do not know whether an advocate of such a method has ever led, in fortress warfare, working parties beyond the line occupied by us, in order to undertake intrenching, etc. I have been there and have seen how difficult it is to keep order in the dark, to prevent a panic or confront it. All such considerations disappear naturally in a maneuver.

It is naturally something different to strengthen the captured points of support at a greater distance from the enemy during the night or even during the day, in order to insure oneself against a counter attack, or to obtain a specially secure artillery position; but to recommend such a siege method in field warfare as the general means for overcoming the difficulties of the attack appears to me to be a great mistake.

The recommendations which the present regulations make (p. 119), concerning the use of night operations, do not at all apply to such a siege method, but only to the advance to the edge of the hostile dangerous zone, and thus to the advancing of the troops while it is still dark, "so that," say the regulations, "the fire may begin toward morning." An attack must therefore be dealt with approximately as at Laon on Hochkirch.

This is, in brief, a description of the expressed opinions concerning tactics as they have appeared during the last ten years, and the state of the infantry fighting methods. The Boer war is supposed to have brought about changes in tactics.

Let us first consider the general conditions and some results thereof.

II. GENERAL CONSIDERATIONS OF THE FIRST PART OF THE BOER WAR—THE ARMIES AND THE THEATER OF OPERATIONS.

The idea predominating in the strategy of a campaign will also manifest itself in its tactics. Yet it must do so forcibly, otherwise there will come to light in the whole conduct of the campaign a hidden inconsistency which can never lead to any result. This therefore means: If I intend to carry on the war offensively, I must seek the hostile army in order to attack and defeat it. The tactical operations will therefore, as a rule, also be offensive, and the tactical attack must therefore be made. Before 1866 the idea had also arisen in us, and was even defended by Moltke, that, assuming a strategical offensive, while relying on the superiority of the needle gun, we could fight on the defensive. We advance, take up a position, let the enemy assault it, and repulse him completely. Marshal Niel also had similar ideas before 1870. The results belied these ideas altogether. The Prussian troops were, in 1866, always on the tactical offensive. There were, of course, a few exceptions, and the reason that the thoughtlessly advancing adversary was received standing with rapid fire and not met with cold steel on the battlefield was found in the sound leading of single organizations.

It is exceptionally rare to see only defensive action in a defense, and in an attack of greater proportions only offensive action. When the defender confines himself to a passive defense only, this is in itself a sign of weakness. The skill of the subordinate leader is principally shown by his being able to alternate with attack and defense at the right time in the excitement of battle. This will manifest itself especially in encounters.

The Boers assumed the strategical offensive in Natal, but they did not take the tactical offensive in a single great action. They took up a position, repulsed the attack effectively, but did not follow up the advantage, and thus did not make it decisive.

Joubert's advance in the direction of Pietermaritzburg led to no result. No attack was chanced.

Some would nevertheless perceive, first of all, in this conduct (which can be explained only by the lack of a thorough strategical idea, namely, to utilize fully the original numerical superiority in one direction with concentrated forces)—some would, we say, perceive in the conduct of the Boers a new active embodiment of the idea: Strategical offensive, tactical defensive.

The progress of the war has shown sufficiently well the impossibility of this method. The strategical advance came to a standstill, and the Boers also found themselves thrown on the strategical defensive, in which they finally had to succumb to the continually increasing force of the world power.

This was the situation as it appeared to the attentive observer at the change of the year 1899 to 1900.

Did, now, the commanders of the Boer army act absolutely incorrectly on this account? Such assertion is far from me. If they had the conviction that their troops were not fit for the great tactical offensive, that insufficient discipline and other moral shortcomings would have let the attack be shattered under the fire of the English quickloader and guns, then the method adopted was certainly the one left to them. We shall perhaps obtain more accurate information thereof from a book which one of the leading Boer generals is engaged in writing.

A Bonaparte certainly, a Frederick perhaps, would have been prepared to fight a decisive battle with these masses and a force concentrated at one point, whether operating against Durban or Cape Town, and to teach his soldiers the offensive in the siege; but Joubert was not exactly a Bonaparte.

We desire at any rate to assert that this idea has as a matter of fact met with disaster in this war also, and that an energetic, rapid, strategical offensive can not be controlled, so much the less, as it is never certain that our adversary will do us the favor of attacking us in our fine position.

In the first period of the war, from October, 1899, until the appearance of Lord Roberts, the defective strategy of the Boers against the many times unskillful tactical attacks of the English certainly did not exert any influence.

There are now very few radical differences in the formations and fighting methods of the infantry of the large armies. It is true that the German regulations of 1888 have had a strong influence on all regulations, also on the English, because the incomparable war experiences of 1870–71, from which were evolved, although seventeen years later, our regulations, had raised our military reputation to the highest pitch among all nations, even among our enemies.

There was nevertheless considerable difference between the English and German attack at that time. The former leaves the carrying through of the fire fight almost entirely to the first line, and the second line first comes into action in the last decisive act. If a third line is at hand, it also remains in rear in order to cover a possible retreat or to begin the pursuit. The deployment of skirmishers is to be as strong as possible, and the extent of front is not to exceed that of the attacking organization in line.

The advance is to take place as rapidly as possible, the bayonet attack being the main consideration. The distance of 450 meters is designated as that at which effective fire is to begin. The second line follows at about 720 meters. As soon as the enemy's fire becomes much felt, the advance is to be by rushes; the volley is especially recommended; magazine fire will first be used immediately before the assault.

The German regulations, on the other hand, emphasize the fact that the deployment of skirmishers is to be sparse in trying to establish contact—that is to say, in the first preparation. But as soon as the decision is sought, strong swarms will be deployed at once and gradually reenforced by the second line. (Part II, 24.) The distances for lines in rear are not prescribed; the distances of the échelons should be such that these can not be hit by one shrapnel cone.

Skirmish fire is declared to be the principal fighting method under all conditions. With us the middle ranges lie between 600 and 1,000 meters. We can, therefore, as a rule, open fire at a longer range than the English infantry.

These were, perhaps, at that time the principal differences in the regulations between the two infantries in carrying through an attack.

It is seen that the German regulations show more points in common with the Boer fighting method than those of the English. But the English had been spoiled through campaigns against savage or half-civilized people, whose attacks they had repulsed easily.

It is well known that the training of the English infantry in utilizing ground and in shooting did not amount to much. The English officers belong to the educated classes and their heroism is undoubted, but their technical and practical military training leaves much to be desired.

A good training of leaders and men in dispersed fighting can be accomplished through exercises and field maneuvers only on varied ground, and not through exercises in large camps. The English, whose laws do not permit their going on to pieces of ground which are private property, were, at the outbreak of the war, in the same position as the French before 1870, who had also carried on routinary maneuvers only in the camp at Châlons.

The English army is in every way an army of volunteers, and the personnel contains many indifferent elements, but it is ever a national volunteer army, and the troops have the consciousness of belonging to the great British Empire, to that race which by its strength and tenacity has subjected several hundred millions of other races, and holds them in submission. It is so much the more remarkable that so many weak spots have come to light in the course of the war.

Opposed to them was quite a peculiar army. A modern militia army, as it has been fondly called by the democratic militia friends, it was not, but it was a levy of all, in any way liable to service, and that of a people who differ extremely in physical and moral qualities from the nations inhabiting Europe. The older generation had obtained experience in fighting with the English, the younger in fights with native tribes, and had through these experiences, but more especially by hunting, developed into excellent shots. Steeled by work and exertion, the Boers also particularly excelled in eyesight.

Their religious bent, of a somewhat Puritan tinge, gave to them the fatalistic belief that God would not abandon a just cause. Toward the English they felt as the victors of 1880, and they treated the natives with the consciousness of a ruling people. However, man remains man everywhere, and no army which desires to fulfill all requirements can lack a strong organization and strict discipline. This has shown itself in the case of the Boers. Not every man left the camp for the trenches when the English advanced. Often enough whole crowds left the camp to go home to work in their fields. The conduct of the Boers reminds one of that in Vendée. Their organization was faulty in the extreme. The "commandos" were of different strength, commanded by a field cornet chosen by themselves. Greater units under permanent commanders were not provided for in their organization.

Nearly all being mounted, the Boers had nothing to suffer from the exertions of the infantry soldier on marches in the burning sun. They were not only able to quickly evacuate a position and to rapidly reach one in rear, but also to frustrate the turning and enveloping movements of their adversary by rapid extensions of their line of defense.

Not only was the individual Boer exceedingly skillful in taking advantage of the ground, as a result of his being accustomed to hunt, but the troops were also skilled in the construction of shelter trenches, etc., since the building of field fortifications is, on the whole, that part of military science which can, for the most part, be managed with good common sense.

Their defensive tactics had something in it of the methods of the natives with whom they had fought. They did not eschew yielding at one point to occupy a position lying in rear of it, in order to fall on the flanks of the pursuing enemy or subject him to a flank fire.

The Mauser rifle was superior to the English Lee-Enfield. The Boer artillery was considerably weaker in numbers, but a large part thereof consisted of rapid-fire guns, which were lacking altogether with the English. The Maxim-Nordenfeldt guns had even at that time shields similar to those now carried by the French field artillery, and are said to have proved quite efficacious against shrapnel and rifle fire.[a]

The peculiarities of the African theater of war have been described often enough in numerous works: Enormous extent, large plains and steppes, steep mountain formations with isolated tops (kopjes) jutting out, which offered excellent cover and firing positions, the slopes covered with boulders; few trees and little water; few villages, consequently few auxiliary sources. These are, in brief, the characteristic features of that theater of war.

From this is seen how it and all the conditions there differ from the European theaters of war, on which our wars took place, and we emphasize here this great difference, because it must also be especially taken into account when considering the tactical conditions.

III. CONSIDERATION OF SOME ACTIONS OF THE BOER WAR.

GENERAL SITUATION IN THE MIDDLE OF OCTOBER, 1899.[b]

The principal force of the Boers under General Joubert advanced in several columns, crossing the frontier mountains into Natal, and pushed forward concentrated against the English camps at Glencoe and Ladysmith. The strength of the Boers was about 20,000 men; that of the English at both points, 9,000 men altogether, with about 3,000 men at Durban and Pietermaritzburg.

---

[a] For particulars see Lindenau, "Supplement to the Militär-Wochenblatt," 3d part, 1902.

[b] The strategical situation is only given in so far as it has an influence on the tactical decision.

About 12,000 Boers under Cronje were used against Mafeking and Kimberly (western theater of operations). A weak southern army had penetrated into the northern part of Cape Colony.

DUNDEE, OCTOBER 20, 1899.

The camp at Glencoe was fired upon on October 20 by 5 guns on the Petersmith Hill at Dundee. The Boers had occupied this hill with 900 men under Lucas Meyer. The columns advancing to the right and left of him were still in rear. General Simmons, whose detachment was 3,500 men strong, let his 20 guns open fire and decided to take Petersmith Hill.

The action shows us first of all a repeated assault of 3 English battalions on the high position of the Boers. The attacks were repulsed. Then came the reenforcement of the English with 4 companies in front, and the launching of a flank attack with 4 other companies, a detachment of mounted infantry, and the Eighteenth Hussar Regiment. The English did not wait for this flank attack, but advanced anew in front. For all that, only the flank attack was decided in favor of the English. But they lost 224 dead and wounded, among them 32 officers, that is to say, 6½ per cent of 3,500 men. The Boers had only 10 dead and 66 wounded. One gun remained standing.[a]

The only thing remarkable about this loss is the proportion of officers to men. Otherwise it must even be regarded as small, considering the repeated frontal attacks of the English. The Boer position was situated on steep hills, which diminish the effect of grazing fire.

The artillery fire preparation—20 guns against 5—compelled the Boers to draw back their guns.

But the position of General Yule, who had taken the command in the place of General Simmons, who had fallen, had become untenable, since Joubert's columns threatened to hem him in.

In order to make his retreat to Ladysmith possible, General White, commander in chief in Natal, who was in this provisionally fortified place, decided to clear the line of retreat for Yule by means of an advance on Elandslaagte.

---

[a] The English lost, according to other accounts, 600 men, and the Boers 100 out of 900. That would be 17½ per cent on the side of the English—consequently still a reasonable loss.

THE ACTION AT ELANDSLAAGTE, OCTOBER 21, 1899.

Gen. Jan Kock had occupied with 800 Boers (including the German Volunteer Corps and 2 guns) the rocky heights northwest of Elandslaagte.[a]

General French was given the task of taking the position with 3½ battalions, 11 squadrons, and 3 batteries. He made very correct dispositions. While the artillery deployed in front of the enemy's position at half past 4 in the afternoon and 1 battalion attacked in this direction, 2 battalions tried to turn the left flank of the Boers. Several squadrons, making a detour to the right, accompanied this movement, while 2 other squadrons went around the right flank of the Boers.

The English artillery fire compelled the Boers to withdraw their guns which were, however, brought forward again and came into action at different times during the infantry fight.

The English infantry rushed forward against their adversary with the greatest contempt for death, in front and on the flank, from terrace to terrace on the steep slopes, bravely supported by the artillery, which approached at a gallop to within 1,800 meters of the enemy's position. A short attack of mounted Boers on the English right flank was repulsed.

The infantry attack came to a standstill at 100 meters from the crest, but at the signal for the charge all put themselves in motion. The height was reached and the position taken. which had been gloriously defended by 800 Boers and Germans. The English cavalry attacked at the same time and completed the victory.[b]

Loss of the English, 36 officers and 238 men dead and wounded. Of the Boers, 450 dead, wounded, and captured. The commander, Kock, was mortally wounded. Colonel Schiel, commander of the German volunteers, was wounded and captured. Count Zeppelin was killed.

It is seen from both these actions that the flank attack was not at all unknown to the English, and that General French used it, on the whole, skillfully. But they also demonstrate that the losses do not assume the frightful proportions at which the hands were raised in horror in our "bloodshy" time. The loss of officers was also unusually high at Elandslaagte.

---

[a] To these are to be added, according to some accounts, about 900 Orange Colony Boers with 2 Maxims. (See Gilbert, "The South African War.") Other accounts say nothing about this.

EDITOR'S NOTE.—According to the German General Staff History of the Boer War, the Boers gave their strength as 646 men and 2 guns.

[b] I can not say whether this attack was made by the squadrons from the English right or left flank. (Note: From the English left flank.—EDITOR.)

We see that the English were victorious in both actions, but the Boers succeeded, by the skillfully executed concentric advance, with superior numbers, in shutting up the English corps, under General White, in Ladysmith, where Yule had arrived after a retreat involving extremely heavy losses, to repulse the attempts at breaking through and thus gain a strategical triumph. But it is also shown further that the best strategy can be entirely successful by means of the final tactical result only, and this did not fail at Ladysmith. The Boers were not able to take this place either by bombardment or assault.

BATTLE AT COLENSO, DECEMBER 15, 1899.[a]

(See Pl. 1.)

English reenforcements (1 army corps) have arrived; they are distributed in the following manner: One strong division to Natal; 1 division under General Lord Methuen to the western theater of operations; 1 brigade and a part of the cavalry division under General Gatacre in the northern part of Cape Colony.

General Buller has assumed the chief command, but goes to Natal in order to take special command there.

There is no question but that a division of forces was caused by this distribution, which must have had an unfavorable influence on the tactical decision.

Buller had, at the end of November, 20,000 men at his disposal for operations in the field. The infantry consisted of the Second, Fourth, Fifth, and Sixth brigades, each of 4 battalions; the artillery of the First Brigade division of 3 batteries, the Second of 2, and 14 naval guns; 1 cavalry division of 3 regiments, 2 independent squadrons, and a detachment of mounted infantry, besides 1 company of pioneers.

---

[a] Apart from a whole series of writings about the first part of the Boer war, Colonel von Lindenau has, in the third part of the Militär Wochenblatt for 1902, made some very pertinent observations on Colenso, Magersfontein, and Spion Kop, to which we are able to refer several times. We can therefore be so much more brief.

In order to relieve Ladysmith, Buller had to attack and defeat the Boers, who were intrenched at Colenso on the Tugela. He concentrated his troops for this purpose in a camp at Chieveley. On December 13 and 14, 8 naval guns bombarded the position of the Boers, north of Colenso, who did not reply.

Colenso lies only 13 kilometers from Ladysmith. If the Boers were defeated here, not only would Ladysmith be relieved, whose garrison showed itself very active in small sorties, but a very difficult retreat of all the Boer forces and loss of much material was to be expected by an energetic pursuit. The Boers had resolved to hold the position north of Colenso. This extended from the Red Hill to Fort Wylie. But Hlangwane Hill, which flanked the line at Fort Wylie, was also occupied. The shelter trenches were, for the most part, not constructed on the heights, but the most advanced at their base were close to the Tugela, with the rest in tiers. The so-called Fort Wylie was constructed of strong boulders.

The accounts still differ as to the Boer force.[a] It does not seem to have exceeded 5,000 men and 5 guns.[b] Joubert had fallen sick and Louis Botha had assumed the command.

Buller's order for the attack was somewhat long, according to our ideas, but I do not think that he prescribed too much when he directed both brigades in the first line to advance against the hills north of Colenso, after they had crossed the Tugela. On the other hand, exception must absolutely be taken to the fact that a purely frontal attack was intended, while a great part of the enemy's position could have been enfiladed—as Buller himself admits—by taking possession of Hlangwane Hill, situated on the right bank of the Tugela.

Instead of doing this, the order sent the Fifth Brigade, Hart, against Bridle Drift (ford); the Second, Hildyard, against the demolished bridge at Colenso; ordered the Fourth Brigade.

---

[a] According to the German General Staff History of the Boer War, the Boers had approximately between 5,000 and 6,000 men, five light field guns, and three 4.7-inch howitzers.—EDITOR.

[b] Lindenau gives 3,000 men and 6 guns. Other writers make quite uncertain statements. Gilbert, South African War, puts it even at 10,000 men.

Lyttelton, to follow the first two and in the direction of a point between Bridle Drift and the railroad, so as to support either the Second or the Fifth Brigade. The Sixth Brigade was to protect the flank of the Second toward Hlangwane Hill, and, if necessary, to support the mounted brigade, which, with 1 battery, was to advance against the above-mentioned hill, and, if possible, take position thereon, in order to *enfilade the kopjes north of the railroad bridge.* Stronger forces would have been required for this.

The Second Field Artillery Brigade Division, besides six naval guns, were to follow the Fourth Brigade, the First Field Artillery Brigade Division was to advance east of the railroad and take up a position from which it could prepare the crossing of the Second Brigade. Six other naval guns were to follow it. One platoon of pioneers was attached to the Second Brigade and two were attached to the Fifth.

The order says nothing about these pioneer platoons having means for crossing the Tugela, but this may be assumed. To the dispositions already enumerated is to be added that the order prescribes only partially an artillery preparation proper of the attack. Instead of ordering the artillery into position against the decisive point or points by advancing a few covering infantry detachments, the Second Field Artillery Brigade Division is to *follow* the Fourth Brigade; only the two batteries of the First Brigade division are to take up a preparatory position.

The time for beginning the movement was between 3.30 and 4.30 in the morning.

A surprise was not possible, because the movements were fully perceived from the Boer position. Buller had, on the the other hand, no definite information as to his adversary's position.

THE EXECUTION.

The Fifth Brigade, General Hart, advanced in close, compact masses without advanced cavalry, point, or skirmishers, in the direction where Bridle Drift was supposed to lie. It received gun and rifle fire at 500 meters from the Tugela, and deployed unskillfully as a result of the surprise. The foremost battalion hastens to the Tugela, finds no ford and can not cross the river, either because the Boers had dammed it or because the ford was situated in another place. The brigade commander now directs the three rear battalions more to the east in order to look for the ford, whereby they come into a bend of the Tugela and receive a murderous cross fire at a distance of a few hundred meters.[a]

A useless fire fight, accompanied by many losses, naturally began, and Buller ordered the brigade to retreat. The foremost battalion could not, however, extricate itself, fought several hours, and a large part was captured.

The Second Brigade, Hildyard, only 3 battalions strong, had advanced against the bridge. If ever a difference has shown itself in the method of using troops in the same army, it was here. The brigade deployed at once strong skirmish lines, allowed even the support to follow in an extended line, and took possession of some farms at Colenso, wherein some parts of the Sixth Brigade, which had deployed against Hlangwane Hill, participated.

To this contributed the fire of the Third Field Artillery Brigade Division and the naval guns, which silenced the guns north of Colenso, and also Fort Wylie.

But at this moment the Fourteenth and Sixty-sixth field batteries, under Colonel Long, advance at a gallop and come into position on the right flank of the skirmish line of the Second Brigade. They were only 500 meters from the Tugela and came under an annihilating fire from the nearest shelter trenches, about 700 meters distant, which laid low the greater number of the men and teams. Ten guns could not be brought back and were taken possession of by the Boers after the retreat of the English.

This occurrence made the commander in chief abstain from any further attempt to force the passage.

An attempt of General Dundonald to advance with his battery and 1,000 mounted men against Hlangwane Hill was frustrated by the fire of the small detachments of the Boers that held it.

The order to retreat to the camp at Chieveley was issued at 10.30 in the forenoon. The Fourth Brigade protected the retreating troops.

---

[a] Gilbert's "South African War" has it, on the other hand, that the brigade turned upstream.

The strength of the troops participating in the action amounted to 15,600 men,[a] 44 guns, 14 of which were naval guns. Loss, 143 dead and 756 wounded; total, 899. This gives only a loss of 5.8 per cent; but in this are not included the missing, among whom were undoubtedly many dead. Estorff gives 70 officers and 1,040 men, of whom 28 officers and 203 men were missing or captured. Müller, on the other hand, gives 1,197 men and 66 officers, among whom 15 officers and 348 men captured. Gilbert, 1,300 men. On the whole, a loss of 900 men dead and wounded may therefore be assumed, which is, however, not quite 6 per cent for the whole corps.[b]

But the Royal Dublin Fusileers lost, according to Lindenau, 23.9 per cent and the Connaught Rangers 16 per cent. As opposed to this, the Fusileer Battalion of the Guard lost, at St. Privat, 54 per cent, the First Battalion of the Fiftieth Regiment at Wörth, 43 per cent; the Sixteenth Regiment at Mars-la-Tour, 68 per cent, and the Fifty-second 52 per cent. Moreover, the regiments of the Guard division (first) at St. Privat and of the Tenth Division at Wörth lost on the average each as much as Buller's whole corps at Colenso.

These numbers speak volumes. They show that the effect of the newest rifles can not be so extremely severe, as is so often assumed from the data of the target ranges, and that the conclusions associated therewith are inaccurate.

The troop leading consisted only in the issuing of the order for the attack and in giving the order for the retreat. When the latter was given there were still intact 2 battalions of the Sixth Brigade and the whole of the Fourth. Consequently, the question may be pertinently asked whether these troops should not also have been used in the attack on Hlangwane Hill and thus have made it possible to repair the mistake made at the beginning.

We will not, however, give our opinion with absolute certainty, as to whether General Buller was right in ordering the retreat. It is a question whether he himself lost his presence of mind on account of the loss of a part of his artillery, or whether he judged correctly the situation of the troops engaged and the Boers' power of resistance.

---

[a] According to Lindenau, Militär-Wochenblatt, 3d supplement, 1902.

[b] The losses as given in the British official account were: Killed, 136 officers and men; wounded, 762; missing, 228. Total, killed, wounded, and missing, 1,126.—EDITOR.

Above all was lacking careful inquiry and preparation. How can a properly planned advance be made against a fortified position without taking proper steps to cross water lying in front of it? We were undoubtedly in the same fix at Wörth, but Wörth was no planned battle.

In the advance of the infantry the enormous difference, as already mentioned, between the methods and formations used by the Second and Fifth Brigades is very striking; that of the Fifth violated the simplest elementary rules of tactics in such a manner that no words are to be wasted on it. The brigade would have been shattered even if it had had no river in its front.

The very same thing must be said of the advance of the First Artillery Brigade division into the skirmish line of the Second Brigade. To do this may be possible under conditions when the attack proceeds uninterruptedly, but in thus preparing the attack everything was done to make it miscarry. Both batteries should have come into position at a point situated much farther to the rear.

Under such leading the behavior of the troops must be appreciated so much the more.

The effect of the artillery was small against the mountain position, except in the instance cited. The conduct of the Boers was wonderful. Artillery and infantry fire was saved for comparatively short ranges. As the English gave way, detachments of Boers rushed forward and surrounded the English troops, which did not dare retreat from the ravines. But the numerical weakness of the Boers prohibited a real pursuit.

ACTION AT SPION KOP, JANUARY 23-24, 1900.

(See Pl. 2.)

Buller now wanted to effect the relief of Ladysmith by a flank march to the left and an attack on the right flank of the Boers on the Tugela. He made elaborate preparations therefor. Since the Boers had, however, pushed forward their outposts across the Tugela to the region of Springfield, the preparations of the English were discovered and the Boers made theirs to effect a strengthening of their right flank.

Buller had at his disposal a total of over 30,000 men, but allowed 1 brigade with 2 batteries to remain in front of Colenso to make a demonstration. All the other troops, 20,000 men, with 60 guns, advanced by the left flank in three echelons, but took 4–5 days to reach Springfield.

The order of battle was: The Tenth Brigade (Coke), directly under the commander in chief.

Warren's division: Fourth and Eleventh Brigades (Lyttelton and Woodgate).

Clery's division: Second and Fifth Brigades (Hildyard and Hart).

Cavalry: General Dundonald, 3 cavalry line regiments, besides mounted infantry, Imperial Light Horse, Natal Carbineers, and South African Light Horse.

Artillery: 8 naval guns, 9 batteries, one of which was a howitzer battery.

The Boers had retreated to their positions behind the great Tugela. The right bank slopes steeply down to the river. The left bank consists of abruptly rising craggy masses of mountains, of which Taba-Myama, Spion Kop, and Brakfontein are the most prominent. The Boer position extended at first from Spion Kop to Kranz-Kloof, and later on the right flank was extended to Taba-Myama. (Plate II.) Botha commanded about 4,000 men and 6 guns.

General Warren had been intrusted by Buller with the immediate direction of the operation. The general intention was to turn the right flank of the Boers and press forward to Ladysmith from Acton-Homes. Such plans would succeed only through promptness. The difficulties caused by the bad roads had frustrated any surprise on account of the slowness of the march.[a]

On the 15th of January Buller's headquarters was at Spear's Camp, south of Springfield. Lyttelton's brigade was directed toward Potgieter's Drift. Warren's division with its two brigades was to cross at Trichard's Drift and make a flank attack.

---

[a] The English line of communication, Gilbert rightly observes, was transferred from the railroad line Pietermaritzburg-Chieveley to the line of highroad Frère-Prätorius-Springfield farm. Instead of making the convoys secure on this line, Buller dragged along right behind him a provision train of 650 wagons, which required 5,000 oxen.

Lyttelton forded the swollen Tugela on January 16 and occupied One Tree Height, where he intrenched.

Warren likewise effected the intended crossing and occupied a few smaller heights on the left bank. The Boers had everywhere retreated to their mountain positions and opposed the crossing only. The cavalry under Dundonald, ascending boldly through the Venter Valley, had reached on the 18th of January a kopje in the vicinity of Acton-Homes and repulsed a detachment of Boers. He awaited the now momentarily expected appearance of Warren's division, but this did not come. Warren sent him the order several times to return to Trichard's Drift, because he believed that he could not bring up his provisions in proper time over the long road from Acton-Homes to Devdorp. According to other accounts, a position taken by the Boers at Devdorp was the reason why this turning movement had to be given up. Here again only the frontal attack remained to the English.

The attacks of Lyttelton and Warren on the positions from Brakfontein to Taba-Myama lasted from January 18 to 22, and were repulsed, notwithstanding the participation of Clery's division. The English captured a few heights everywhere, but were unable to advance against the principal position of the Boers. Their attack formations consisted of dense skirmish lines, with troops following in close order. The artillery, installed on isolated kopjes, was unable to do anything against the high, craggy positions of the Boers.

Buller therefore approved of Warren's proposal to take Spion Kop by a night attack.

This movement, executed by 3½ battalions of Woodgate's brigade, succeeded in gaining possession, with quite a small loss, at 3 o'clock in the morning of January 24, of the weakly occupied southwestern point of the triangular flat top of Spion Kop. The English evidently believed that they had possession of the whole mountain, because they intrenched at the southwestern point. But this was not so, because the flat top rises toward a transverse height, which lies about 600 meters from the English shelter trenches and covers the approach to the northern part of Spion Kop. Notwithstanding the darkness and a thick fog, it remains inexplicable that the English did not advance at least to the ridge crossing the top. Failure to do this resulted in severe punishment.

Botha immediately directed the fire of several heavy guns against Spion Kop, from Taba-Myama and other heights, and advanced in two columns of a few hundred men, followed by 2 Maxim guns, against the northern slope which was ascended undisturbed by the English. The English posts on the cross ridge were overthrown and the Maxims were brought up. The Boers advanced to the attack by groups, clinging in their usual manner to the ground strewn with boulders, but did not succeed in driving the English from the ground taken. On the other hand, the attempt of the English to gain more ground succeeded just as litttle.

Lyttelton, who had been charged with the advance against Brakfontein, had in the meantime attempted his attack. During this movement he received a request for reinforcements from the troops on Spion Kop, which he answered by dispatching two battalions. The Royal Rifles ascended the mountain from the east side, while the Scottish Rifles enveloped it from the south and west side. The first mentioned reached the summit of Spion Kop and threatened therefore the left flank of the Boers, but could extend no farther and made no progress; the Scotts pressed into the dense mass of the other troops without being able to add any weight in the balance, because the troops were extremely exhausted on account of lack of water and by their exertions, and were exposed continually to concentrated fire, closely packed, without space for deploying and without artillery. Altogether, 7½ battalions were massed on Spion Kop. General Woodgate had fallen and the command devolved first upon Colonel Crofton, then upon General Coke, and finally upon Colonel Thornycroft. Warren had sent the first-mentioned, orders by heliograph to hold out to the last, and had then *very late* ordered one mountain battery, naval guns, and working parties to proceed to the height, but it was too late. Thornycroft had issued the order for retreat at 8 o'clock. With this the new attempt at reinforcing was frustrated. The attempts made by Buller 8 days later to break through at Kranz-Kloof were likewise unsuccessful, and he retreated to the camp at Chieveley and Frére.

The English losses from January 23 to 24 amounted to 1,437 dead and wounded, or 7 per cent of all the troops that had been present on the battlefield. Gilbert gives a loss of only 1,150 men. If it is assumed that 1,000 men of this number fall to the troops used on Spion Kop, which were 5,000 strong, the loss would amount to 20 per cent. But herein are not included the captured and missing. The first are said to have included several hundred men. According to Lindenau, the Royal Lancaster regiment lost 17 and the Lancashire Fusileers 17.2 per cent.

What, now, can be learned from this action in favor of new tactics? Very little, according to my opinion. The losses of the English at Spion Kop were certainly not small, but did not, by far, reach those of many German organizations at Wörth, Spicheren, Colombey, Vionville, Mars-la-Tour, Gravelotte, and in part at Sedan. But these losses were inflicted with a single-loader, whereas the Boers carried an excellent modern multi-loader. Even if the missing are excluded from the list, as Lindenau does, the total number lost would not at all reach ours and many of the French losses in 1870. Those of the Russians at Plevna also exceeded the losses of the English. I will not deny that the multi-loader has, in certain instances, obtained a shattering effect on account of its range and rapid fire (the flat trajectory has no influence in the mountains), but the verdict must, on the whole, be that the English attacks did not fail on account of the effect of modern weapons, but on account of the unfavorable ground and the conditions connected therewith, and, finally, on account of faulty direction of the fighting.

The aimless wandering about for several days, which caused attacks to be made at different points instead of making one principal attack with concentrated forces against a single point of the right flank of the Boers, is excusable on account of the lack of maps and information concerning the extent of the Boer position toward the west. But the continual fighting and cannonading contributed to the weakening of the strength and nerves of the troops. There are undoubtedly some men who, the longer the noise of the fight and the whistling of bullets continue, the more they become accustomed thereto, but the nerves of the majority will be shattered. Then the lack of concert and of energy in leading on the 24th of January, on which day everything should have been engaged, caused a considerable number of troops to remain inactive.[a] Finally, the proper connection was lacking between the troops engaged and the commander of the attack, General Warren.

---

[a] Lindenau, with whom we fully agree here, states 11½ battalions.

But we are also of the opinion that General Buller should have proceeded to Trichard's Drift on the 24th. Here he could have taken in the situation with his own eyes and personally asserted his authority. The principle which we especially maintain at present, that the commander in chief shall remain at a suitable point behind the fighting line, so as not to let himself be influenced by the impression of isolated incidents in the fighting, is on the whole correct, and is especially applicable to our large armies, but should not keep the commander in chief from proceeding to the decisive point, of course not in the first line, at especially critical moments.

If the principle of his remaining in rear was to be considered binding in all cases, it would be to renounce entirely the influence of the commander's personality on the subordinate leaders.

But what is especially noticeable in this action is the small effect of the English artillery, which had here 60 guns against 6. This may be a hint to us not to overestimate the power of the artillery, because, although great actions will not be fought on similar ground in Europe, similar phenomena may present themselves in mountainous countries.

The absence of smoke has also here been of decided importance, because information and observation of the fight have become much more difficult to the commander.

The English troops accomplished in those days of fighting everything that could be expected of good men. We must not underestimate the difficulties that confronted both the leaders and the men.

The Boer leaders showed fine skill in divining the intentions of their adversary and in their counter precautions. The tool did not fail, because the movements of the mounted Boer infantry were certainly executed rapidly. The offensive of the Boers at Spion Kop was skillfully executed, but with small forces, and although they did not succeed in driving the English down from Spion Kop, they caused them to evacuate it by means of their enveloping fire effect.

But this attack can not be taken as a proof of the general excellence of their methods, which were here imposed on them in due form by the ground.

The English troops had the Great and Little Tugela at their backs. A simple pressing forward of the Boers would have brought about a defeat. This did not take place on account of their lack of discipline, of understanding of the situation. and of energetic will power on the part of the superior leaders.

LORD METHUEN'S CAMPAIGN AGAINST KIMBERLEY.

To the western theater of operations was sent, from the reinforcements that had arrived, the first division, under Lieutenant-General Lord Methuen, with the object of relieving Kimberley and Mafeking. The complete division consisted of the First (Guards) Brigade, 4 battalions; the Third (Highlander) Brigade (Wauchope), 4 battalions; the Ninth Brigade (Pole-Carew), 3½ battalions; besides 1 battalion of the Gordon Highlanders, 1 naval brigade of 1,500 men, one-half battalion of mounted infantry, 2 lancer regiments, 5 batteries, 1 naval gun, and 1 pioneer company with a balloon section. The total number amounted to about 12,000 men, but the following had not yet arrived: The Third Brigade, and of the Ninth 1½ battalions was still lacking, as was also 1 battery, so that the total was reduced to about 9,000 men.

General Cronje commanded the Boers in the west; he left the siege of Kimberley and Mafeking to separate detachments, and decided to throw himself with his main force in front of General Methuen.

General Methuen, eager to advance, started with his still incompletely equipped force, on the 22d of November, from the camp at Orange River and advanced against Belmont. The country has here quite a different character from that on the Tugela. The theater of operations is on the whole hilly, from which rise isolated craggy kopjes, especially on the northern bank of the Modder River.

Cronje had pushed forward some detachments to delay the British advance as much as possible and determine their strength. He kept his main body back.

The actions fought with these detachments during the advance of the English are called Belmont and Gras Pan. They were characterized by this, that the weak Boer detachments awaited their adversary on intrenched hills and opened fire at short ranges; then, when threatened by superior forces in front and flank, they threw themselves on their horses and made a stand at the next ridge, so that the English were compelled to make repeated attacks, which cost them very many men.

The English by no means forgot to threaten the flanks of their adversary in these fights, but they advanced, on the other hand, in the morning at Belmont, in closed masses without the necessary reconnaissance, and were fired into at short range. The Boers had only 600 men and 2 guns at Belmont and 1,500 men and 6 guns at Gras Pan. The English losses amounted to 500 men, quite considerable for advance-guard actions. The Boers in the meantime retreated to Riet River, the northern bank of which Cronje held with about 7,000 men and 10 guns.

ACTION AT RIET OR MODDER RIVER, NOVEMBER 28, 1899.

(See Pl. 3.)

Methuen halted in his advance on the 27th of November at Klockfontein, about 8 kilometers south of Modder River (see Sketch III). Modder River is the station at which the railroad crosses Riet River, west of the place where the Modder flows into the Riet. The rivers were swollen and they have a strong current, but can be forded in several places. The northern bank rises throughout above the southern, and the width varies from 250 to 300 meters. The railroad bridge had been destroyed. There is a dam at the confluence of the Modder and the Riet.

Contact with the Boers had been lost on the 27th of November. Methuen himself reconnoiters and discovers from the left bank of the Riet no trace of the Boers. Other reconnaissances had the same result. Incredible, but true!

Methuen, who had considered whether he ought not to march on Jacobsdal—which road Lord Roberts followed later—but afterwards decided on crossing the Riet directly, gives therefore only one march order. He wants to cross the Riet at Modder River station and then await the arrival of the Third Brigade which had been assigned to him.

But the intrenched line of the Boers extended from the Modder River Place to the point where the Riet makes a sharp bend from south to west. The guns were distributed in gun pits along this line.

The Boers had also thrown up shelter trenches on the south bank, which were partly concealed by the brush growing along the bank, and had marked the distances to the front. The retreat across the Riet River was secured as much as possible by means of rafts, ferries, and two fords at the Modder River station.

The position of the Boers thus formed a crescent into which ran squarely the English division that marched on the railroad station. The Orange Boers held the right flank, which extended from the Modder River station to the railroad, the Transvaalers the left.

Methuen's division began its advance at 4 o'clock in the the morning. Its strength amounted to 9,000 men and 22 guns, inclusive of 4 naval guns, because it had received the day before, reenforcements of 1½ battalions and 1 battery.

General Methuen was now very much surprised to receive fire from the left flank of the Boers. He deployed his artillery against it in the positions shown in the sketch. An ineffective artillery duel, lasting 2 hours, now began. The Boer artillery, with its superior material, held its position against the English. Still believing that he had only a rear guard in front of him, General Methuen ordered the infantry to attack, and the brigade of Guards advanced east, the Ninth Brigade west of the railroad, consequently right into the encircling crescent.

The Boers open their rifle fire first at 700 meters and inform the English of their position.

The brigade of Guards now turns against the left flank of the Boers and the Ninth against the right, so that the English fighting line formed an obtuse-angled triangle, which had its vertex at the railroad—one of the worst forms of attack that can be imagined, because both flanks would diverge more and more during the action.

We may be brief. For 4 hours the rifle fire reverberates on both sides and nowhere do the English succeed, notwithstanding their artillery supports them bravely by advancing, and although they arrive at a point as close as 500 to 600 meters to the intrenched and invisible enemy, whom they fight in vain with skirmish fire and with volleys. No order reached the first line, neither were the ambulances able to approach. A suffocating heat of 43° Celsius prevailed.

The smokeless powder makes it impossible for the English to discover the position of the Boers in the shelter trenches on the southern bank of the river. They fire continually at the heights on the northern bank.

An attempt made on the extreme right flank of the English to cross the Riet fails.

General Methuen now orders the right flank of the Boers to be attacked. A large part of his artillery concentrates its fire on the dam, and this time with tolerable success. The Ninth Brigade takes the kraal lying south of the river; one detachment crosses the river on the dam and intrenches itself on the northern bank. In the evening English skirmishers even force their way into some houses at Modder River.[a]

The fact is that the Orange Boers posted here lost courage and wanted to quit the field in complete demoralization, so that Cronje was compelled to evacuate the whole position in the evening. Krüger's correspondence with Stein, in which he complains that many Boers had remained in camp, confirms the pusillanimous conduct of the Orange Boers. On account of this, Stein addressed a stinging rebuke to the burghers.

Although the English could consequently consider themselves as victors, they did not think of following up their partial success. Great exhaustion and an incorrect estimate of the situation seems to have contributed thereto. The English losses amounted to 24 officers and 462 men; that is to say, about 5⅗ per cent.

I will state once more that there is no question of an enormous loss in the fighting, lasting nearly the whole day, and that notwithstanding the Mauser rifles of the Boers, notwithstanding their modern guns, and notwithstanding their skill in shooting. These lost about 100 men; according to others, 350.

That the action at Modder River was a Pyrrhus victory was evident, since Methuen placed his troops in a camp at Modder River Station for a rest of several days.

What may be said concerning Modder River follows to a large extent from our short account. The reconnaissance was miserable, and shows us that the cavalry and mounted infantry were compelled to obtain information by dismounted fire action. When patrols ride forward and retreat again as soon as a shot is fired they do not exactly do enough nowadays.

---

[a] I follow here the work "The South African War," by Captain Gilbert. Other accounts (Estorff, Müller), speak only of the crossing of one small detachment at Modder River.

The English did not perceive the retreat of the Boers, and contact was consequently not maintained after the action. We will not criticise this too harshly. How often has not the same error been committed?

BATTLE AT MAGERSFONTEIN, DECEMBER 11, 1899.

(See Pl. 4.)

During the rest in the camp at Modder River, Methuen's communications were threatened several times by the bold enterprises of the Boers. But since he now had the whole Third Brigade (Highlander) with him, and since, furthermore, 1 regiment of lancers, 1 horse battery, 4 mortars, and 1 naval gun had joined him, and he had a total force of 12,000 men and 23 guns,[a] he determined to advance against the position which Cronje had taken up after his retreat from Riet River.

The Boers, about 7,000 strong, with 13 guns, had taken position on the heights extending from the railroad in an easterly direction, but their position was extended, by means of shelter trenches, from the southeastern slope to Modder River. The guns were distributed along the heights, but the shelter trenches were thrown up not only on the heights, but also at their foot. Cronje had this time placed a reserve in close order behind his left flank (Sketch IV).

The reconnaissance of this position, lying so close to the English, was again defective as at Colenso and Riet River. Its terminating points had not at all been ascertained, and yet it must be inferred that the disposable cavalry and the mounted infantry, would have been sufficient to carry out such a reconnaissance, either on the road to Jacobsdal or in the direction of the railroad.

On December 9, Methuen ordered the Boer position bombarded with 1 naval gun. The Boers did not stir.

The division advanced on December 10, halted a few thousand meters in front of the position on the heights, and bombarded it for several hours with artillery, without the Boers answering, exactly as at Colenso.

---

[a] Gilbert, "South African War," gives 15,000, which seems much too large.

Lord Methuen now determined to attack the left flank of the Boers. The Highland Brigade advanced during the night between the 10th and 11th, in close columns, without any scouts in front, in the direction of the southeast extremity of the enemy's position on the height, and along the road to Kimberley, fortunately crossed the wire entanglements, but received in the darkness, at 200 to 300 meters, such an annihilating fire that they recoiled, which is the modern military expression for running away, and could not again be brought to a stand until at 800 meters from the enemy. We believe that no troops led forward in that manner would have done any differently. Isolated attempts to advance again were soon given up. A terrific fire action now began.

When dawn came the artillery went into action, to which the Boers replied at first with a Maxim gun. But the English artillery did not succeed in subduing the hostile infantry fire.

Methuen now sent the Guards against the Boers' left flank, which extended clear to the Modder River. Three battalions were in the first line and one in reserve. These brave troops, who were inspired by the highest sense of honor and the most glorious traditions, sustained a fire fight lasting many hours and also reached the wire entanglemants, but did not come to an assault. The English artillery advanced bravely to within 1,100 meters of the enemy without being able to shatter their power of resistance. The Ninth Brigade had taken up a position in support.

The Gordon Highlanders had been pushed forward to protect the line of artillery and support the Highland Brigade; they now attempted an attack, but were repulsed at the wire entanglements. On the other hand, a turning movement on the part of the Boers miscarried against the left wing of the Yorkshires, who had been sent to Brown Drift.

The Boers had, in the meantime, deployed their artillery against the Highland Brigade, had renewed their rifle fire, and had advanced against the brigade in small bodies, stealing skillfully across the ground according to their method. And now something happened which does not redound to the glory of the celebrated English troops, who had in the meantime been reenforced by the battalion of Gordon Highlanders. A great many ran to the rear. They rallied behind the English artillery, which they left unprotected; but as a few shrapnel reached them they again continued their flight to the ambulances. As the Boers again made attempts to attack the left flank, Methuen gave up the fight as lost and let the retreat begin.

Three battalions of the Ninth Brigade and the Scotch Guards had really not been engaged.

The keeping back of the 3 battalions of the Ninth Brigade can only be explained in this manner—that Methuen feared an attack of a flying column on his train and wanted to use them to repulse it if this happened. A sufficient reason is, however, lacking for the nonemployment of the Scots and the mounted infantry. The losses amounted to 895 dead and wounded, or something over 7 per cent. Two battalions of Highlanders had lost, one 282 men, or 35 per cent, and the other 187, or 23.4 per cent.[a]

These losses do not reach ours in the August battles, either in the total or as regards single organizations (see p. —). What right has one now to speak of the difference of effect between the *chassepot* and the multi-loader?

The losses of the Boers have been stated differently. The accounts vary between 200 and 600 men.

The night attack was planned and was to be directed against the left flank of the Boers, but since the reconnaissance was again utterly defective the attack did not strike the left flank, which extended clear to the Modder River. If the eastern edge of the heights had been taken, the other part of the Boer position could certainly not have been held.

We shall not presume to give an opinion as to whether Methuen would have done better to go off to the left, since the maps, heretofore furnished, vary much.

As the Highlanders advanced along the road to Kimberley and the Guards were placed to the rignt of them, a purely frontal action developed, in which 12,000 English were not able to overcome 7,000 Boers. Only about 9,000 were, however, really engaged. The superior number of the English guns did not make itself felt at all, and the tactics, again used by the Boers, in not engaging their artillery in an action against superior numbers, seems to be a very admirable proceeding on the part of the defender. When one has engaged in an artillery duel and, getting the worst of it, wants to withdraw, it is too late. Then there will be a certain number of dismounted guns, and the whole force can no longer be used against the infantry attack or to support a sortie.

---

[a] According to Lindenau. Müller gives the total loss of the Highland brigade as one-third of its officers, among whom was General Wauchope, and 725 men. Gilbert, "South African War," gives the total loss, including missing, as 971 men.

NOTE.—The German General Staff History (English edition) gives the British total losses as 68 officers and 903 men, or 7 per cent of the total strength and 13 per cent of the force actually engaged. The Boer losses are estimated at 250 killed and wounded, or 5 per cent of approximately 6,000 Boers in action.—EDITOR.

At Belmont and Magersfontein the night advance of the troops, who were to attack first in close masses, was certainly ordered with the intention, which is correct in itself, not to let the troops get out of hand in the night. But no night advance can ever be made entirely without scouts, which must certainly be only 50 to 60 paces from the front. Furthermore, several battalions must not advance in one compact mass, but with at least some distances and intervals. If it is intended to deploy after having received the first shots, as is said to have been the case here, it is certainly the worst procedure imaginable; the troops must without further delay throw themselves at a run on their adversary and run him down.[a] Whether only and solely a picket is encountered is another question. What we have said of night attacks is fully confirmed by the panic of the Highlanders. The advance of the Boers on the right flank, which had such a bad influence on the Highlanders, was of no importance, but was well supported by the Boer artillery.

The English cavalry believed that it had no opportunity to interfere. If it had been used on the extreme flanks, it would certainly have found opportunity.

An energetic final thrust on the part of the Boers would have been able to annihilate the greater part of the English forces, but as at Spion Kop, it did not take place here.

Methuen retired unmolested to his camp, where he remained encircled by the enemy's commandos, and with his communications threatened, until the arrival of reinforcements and Lord Roberts, the new selected commander in chief.

---

[a] According to Gilbert's "South African War," the Highlanders were just about to deploy when they received the fire.

The second period of the war begins with the assumption of command by Lord Roberts. Strategically this is characterized by the advance of the British main army under Roberts against Cronje's corps, its outflanking, pursuit, and capture, the relief of Kimberley and Mafeking in consequence thereof, the occupation of Bloemfontein, the further advance of the British northward, and the fall of Pretoria. In consequence thereof the relief of Ladysmith and the evacuation of Natal by the Boers were brought about and Buller's advance into Transvaal made possible.

The strategical movements of the English were conducted with consistency, deliberation, and determination.

Tactically the English advanced, in the actions that took place up to the time that Pretoria fell, in such a manner that they enveloped many times both flanks of the Boer positions and with cavalry. Their fronts were therefore often enormously extended, so that a European army would certainly have tried to penetrate, with concentrated forces, the thin lines in some place. There are certainly people who regard the victory as assured by a turning movement, but this will always depend on the strength of the lines making the turning movements and whether they are still capable of resisting a skillful and quick attack executed in the proper manner.

But Roberts would hardly have made use of this great extension of front without a very great numerical superiority, even against the Boers, whose lack of offensive power he certainly estimated correctly. Thus, much is allowable that would perhaps be severely punished under other conditions.

The defective strategical planning of the campaign by the Boer leaders, who undertook more than they could manage in the capture of Ladysmith with their main army, appeared in its proper light through the outcome of the second period.

The third period of the war was a protracted partisan warfare, which was carried on with the greatest skill on the part of the Boers. Consideration of its actions would be of no use for our present purpose, but it may be remarked that the Boers who remained with the colors had, for the most part, remedied the defects which they showed in the previous periods of the war, namely, lack of discipline and offensive power. The commandos had been divided into companies, and these into sections by an order of September 4, 1900. The election of officers was abolished, and the nominations were made by the higher officers and confirmed by the President.

There was not much to see of the so-called Boer attack in these actions, but there were certainly sudden, bold advances, as at Tweefontein, December 24, 1901, which to some extent brings to mind the celebrated action at Majuba Hill in 1881. At Tweebosch, where Lord Methuen was wounded and captured, it was shown that cavalry (that of the Boers) is able, under certain conditions, to approach within a few hundred meters of firing infantry and that therefore every attack against infantry must not be condemned offhand.

The Boers had become weather hardened and tried soldiers in the protracted struggle. The English, on the other hand, who were at last compelled to call out 300,000 men against the smaller nation, had a large number of badly trained, inferior troops in Africa. The time-honored tenacity of the Anglo-Saxon race and its strong patriotism again showed themselves in this war, and the enormous difficulties which space and climate opposed to the English troops must not be forgotten.

But Delarey, De Wet, and Botha will be put down in history, not only as models of bold partisans but as models of heroic conduct.

IV. DEDUCTIONS FROM THE BOER WAR.

The first deduction which was made public, was the assertion that the Boer war demonstrates that the frontal attack is no longer practicable. It was promptly made by those who had already before adhered to this thesis. They believe that they see their opinion confirmed. The remarks which we have added to our short description of some of the actions prove that not only the most modern firearms, which were undoubtedly used for the first time between troops of the European race (the short and wholly localized Spanish-American campaign is of little consequence), caused the English attacks to be shattered; but that in this case also, a wrong direction of the attack, defective leading, often not sufficient energy in carrying through the actions, routinary methods, unsuitable formations, the peculiar nature of the adversary, and the ground, played a great rôle.

It will not be denied that the effect of the Boer's rifle fire, through its range and rapidity, is to be acknowledged as a new factor which enters into play in many instances of the action. But we believe that we are not, on the whole, wrong in asserting that the decision would have been exactly the same in case a single-loader had been used, and that consequently new experiences can not always be obtained from the course of an action. We perceive the proof in the comparison, which has been made several times, of the losses of 1870 with those of the Boer war. Yes; it may be asserted that in some instances the issue of the action would not have been any different, even if the defender had carried a muzzle-loader. Then how often were the above-mentioned conditions of the ground, the leading, etc., the deciding ones? This is seen throughout the whole military history from the oldest time to the present.

Remember the struggles of the Tyrolese and the Vendeans, in which the character of the country played so great a part: the enormous losses of Frederick's troops at Prague, Kollin, and Torgau, those of the Guard at St. Privat, which were to a great extent attributable to the glacis-like slope of the ground in front of that place, while the attack of the V Corps at Wörth had again great local difficulties to overcome (the Sauer, steep slopes, woods, and dense growth). Both frontal attacks gained ground first after the attack of the Saxons in the former place and that of the XI Corps in the latter had produced their effect. But should they have been omitted for this reason? Certainly not. A flank attack can after all be effective only when the enemy is held in front. But this can only be done by attacking resolutely, not through passive demonstration.

Although the combination of the front and flank attack must be regarded as the most desirable, it is, however, wrong simply to declare the frontal attack impossible, and the Boer war does not at all give a right thereto, even on account of the other numerous perceptible influences on the issue of the actions.

The mistakes, which the English have made in regard to formations, have already been sufficiently described by us and others.[a] We must agree with those who assert that a great similarity existed between the English attacks and the method of attack seen many times on our drill grounds. But it is, however, not a fact that is to be forgotten that on the drill ground, which is in most cases a level stretch, the same procedure will always take place, just because the extraneous conditions for deviating from this sameness are lacking, or these must be created arbitrarily by suppositions which will often give quite unnatural representations.

Now, the representation on the drill ground shows the deployment of dense swarms, which, as we have already mentioned above, have long since been recognized as correct in principle (see p. 128). These dense lines, which were used by the English also, have undoubtedly often suffered great losses, especially when they came to a standstill at one point or another, whereby a profitable use of the weapons one way or another was prevented. But these are matters which can not be quite avoided with any other formation.

Finally, the fact that the losses of the English were smaller than those inflicted on us in August, 1870, with the single-loader, the *chassepot*, contradicts the assertion of the new experience concerning the impracticability of the frontal attack.

The second deduction was, that our attack tactics must be changed. This opinion is principally based on the repulse of the English attacks and not on the attacks of the Boers. But is it, on the whole, possible to speak of a Boer attack on a large scale? The instances in which the Boers took the offensive, apart from the third period of the war, are so rare that no type or radical principle can be discovered therein. It was a stealing toward the enemy, with excellent employment of the firearm and the tendency to shoot him out of his position. When did it happen? One single time, against the already badly shattered Highlander brigade at Magersfontein, in which case it can not be determined whether the advance of the Boers or their artillery fire was the most effective.

This advance of single men and small groups had already been employed in our "Waldersee method"[a] long before our great wars. It disappeared to a great extent with the introduction of the breechloader, because it was seen that a sufficient fire effect was not obtained thereby. The instruction contained in it concerning a proper use of the ground was retained.

---

[a] By me in a series of articles in the Tägliche Rundschau, 1899-1900.

This is consequently nothing new in itself. We are quite strangely affected when we must listen to people who tell us that we have heretofore carried out our attacks with altogether unsuitable formations, with close-order shock tactics, etc. It sounds almost as if extended-order fighting were a new invention. But the German is always easily disposed to undervalue himself, and this undervaluation had already begun after the Franco-German war. The heavy losses, which must naturally occur in any attack, were many times attributed to the division into lines, which had nothing to do therewith, and in many cases to formations in close order where such formations were not at all used.

But it should, however, be acknowledged that we must examine the phenomena of the Boer war just as attentively as we turned to our benefit the experiences gained on other theaters of operations in our time of peace before 1864. In this case it should, however, be remarked that we then drew partly wrong conclusions. Thus, for instance, after the war of 1859, the so-called "zouave mania" held sway over us for a long time, which was first dampened by our very sensible regulations of 1861. This mania was called forth by the exaggerated accounts of the impetuosity then shown in the French assault.

Now, it is certainly correct that a careful army headquarters should carefully consider all the new phenomena, and embody their conclusions in regulations, under whatever name they may be known.

Nobody can guarantee that the right has always been thus arrived at. War experience alone is the proof. The best conducted maneuvers and the most careful firing practice can not make up for it. In this case it is certainly an important matter—as I have often asserted—not to put a one-sided value on war experience, not to lay down this or that as a standard, because it has just been gone through, but take the average experience. But one thing remains always the same, viz, the impression of war on the minds and nerves of men.

---

[a] Count Waldersee was an uncle of the Field Marshal and was Minister of War in the fifties.

The regulations of 1861—consequently issued without great war experience on our part—to be sure emphasized correctly the effect of the needle gun, on the supposition that the adversary would have a muzzle-loader. The correct details did not become apparent in 1866 against the mass assault of the Austrians, but became noticeable first in 1870. May this be a hint to us not to draw conclusions and introduce methods that rest more on an outward looking at matters than on the deep conception of war, and the knowledge of the factors which influence it. This reminder is so much the more appropriate as war experience disappears more and more from the army.

V. REMARKS ABOUT THE NEW PROVISIONAL REGULATIONS IN ENGLAND, AUSTRIA, AND FRANCE.

ENGLAND.

It seems expedient and just to consider briefly the new English regulations, which must certainly be the result of self-experienced war incidents. We shall emphasize some principal points of the paragraphs on fighting and mention first that the English battalion numbers 24 officers, 50 noncommissioned officers, and 1,016 men, and is divided into 8 companies, each of which is divided into 2 half companies.

Great value is placed upon the instruction of the individual in initiative, since the regulations dispense with strict formalities in leading bodies of troops in extended-order, having a strength of about that of our platoon.

In the mixing up of organizations, the men are to place themselves under the nearest officer or noncommissioned officer.

I had already earnestly recommended this in my *Tactical Deductions*, which appeared right after 1870–71, under the heading *Practice in Disorder*.

All instruction and deployment of skirmishers is to take place under cover. But how, when this is lacking?

The advance by rushes is to take place with as long rushes as possible, up to fully 90 meters (consequently the opposite of what has lately been declared practicable with us).

The rushes are to be made in small detachments and groups. Scouts precede the attack at about 800 meters. The advance of the skirmishers is to take place in quick time as long as possible, creeping when necessary.

On covered ground and against a badly armed enemy the distances between echelons are to be 180 meters; on open ground, over 270 meters to prevent one shrapnel cone from striking several echelons. (Very routinary.) The fire of the attacker is to be as enfilading as possible, hence greater extension. At close ranges the firing line is to have a density of one man per yard (91 centimeters).

Extent of front of the units:

A company of 100 men, 90 to 360 meters.

A battalion of 800 men, 540 meters.

A brigade of 3,200 men, 1,080 meters (two battalions in the first line).

A brigade of 3,200 men, 1,600 meters (three battalions in the first line).

In the Franco-German war the extent of front was very variable; it may, however, be assumed that on open ground it did not exceed 1,000 meters for a brigade.

In the attack, a larger body of troops is to deceive the enemy by feints, hold him in front, and prepare a flank attack. (Not exactly new.) The demonstrating troops are to attack with thin skirmish lines. The reserves are to be kept far to the rear.

The passing from the march formation to the action is not greatly elaborated, and, according to my opinion, correctly so, since the orders needed therefor do not belong in the regulations.

While the troops deploy in the assembly formation the leader has gathered information and gives his orders to his subordinates. A base battalion and a point of attack are designated for every unit. (It will always be possible to find the latter.)

Signal flags will be used for communication between the different echelons.

All troops that are designated for the attack form: The fighting line, second line, and third line (main reserve).

The battalions divide into several echelons, as soon as the long-range fire of the adversary is felt. Consequently, in the case of the present artillery fire effect, above 5,000 meters, the companies and half companies are extended into sections, and are groups of 25 men, or less on account of previous losses. The field is thus, at this moment, covered with fighting atoms.

A section or half company follows the scouts, with intervals of 5 paces between men.

The rest of the company follows at 270 meters in a skirmish line. The second line may also advance on open ground in several deployed lines. (Will give a fine fire from the rear.)

The formations in close order are to be resumed under cover.

The running or creeping skirmishers now try to work forward to the decisive firing position. (The firing line must, however, be made more dense, at this moment, otherwise an effective preparation can not very well be spoken of.)

The execution of the assault is not essentially different from our regulations.

As regards the defense, we shall only mention that the counter attack is recommended.

So much for the English.

AUSTRIA.

In the general rules which the new Austrian provisional regulations contain, on pages 160 to 167, there is also mentioned a greater extent of front within proper limits, but an extravagant tendency to avoid losses nowhere comes to light. Provision for special scouting by the skirmish line is not contained therein. The fire effect is, above all, to be developed to its fullest extent. There is no question of a deployment of the supports and rear lines. The advance is to continue uninterruptedly until the enemy's fire compels deployment.

The rushes—as is provided in the English regulations—are to be continued as long as possible. About the same provision, as in all other regulations, is provided for the execution of the assault.

To hold the enemy, in order to actually attack him in another place, the principle (contrary to the English regulations) is laid down to advance close and form strong skirmish lines (which seems correct to us).

There is therefore nothing to be seen in the Austrian provisional regulations as to the adoption for the attack of the characteristic features of the so-called Boer tactics.

FRANCE.

The same can not be said of the new French provisional regulations. They differ greatly from those preceding them and rest in many respects on the German regulations, especially as regards the leading of larger bodies of troops and the freedom of action to be given to the subordinate leaders. They permit the deployment of the battalion into sections and half sections at about 1,200 meters, in which case it is allowable to form the sections in four ranks, whereby they are more easily handled.

The skirmish line may, when found necessary, also make the rushes in groups (small fractions). The fire will be opened first when that of the adversary makes it compulsory. The distances at which the enemy's fire is to be answered lie between 700 and 400 meters. The reenforcements which mix up in the firing line, are, as a rule, to carry the skirmishers with them in the further advance.

One hundred and fifty meters is designated as the assaulting distance. At this moment the assaulting troops in close order are to be 260 to 300 meters from the skirmish line.

On the defensive the counterstroke is recommended. The regulations breathe on the whole the spirit of the most reckless offensive.

The complete rejection of the volley goes too far. The volley can not be dispensed with in night firing, and is also very useful against cavalry and in every kind of surprise.

VI. PRACTICAL RESULTS AND EXPERIMENTS IN GERMANY.

Different writings, and among others the *Lessons of the South African War* by Von François, the former governor of Southwest Africa, which appeared in 1900, and the *Military Considerations of the War in South Africa*, which appeared in 1901, had—apart from the considerations which had been woven into the works heretofore published in regard to this war—gradually brought the question of reform in the infantry attack to the experimental stage.

Lieutenant-Colonel Von Lindenau's lecture, which has been mentioned several times, has also contributed thereto.

But when the foregoing experiments have been based upon the assertion that the tactics of the German infantry is at this instant in a state of transition, as for instance, the work *The German infantry attack according to practical experiences on the Döberitz training ground at Berlin* does, a false basis is chosen. There is at most a question of some practical changes. To speak of radical changes is simply bosh. Such change took place in the same manner as the thick crowds of lansquenets changed gradually to the line tactics, as the column, combined with the skirmish fight, again gained the upper hand against this, as the battalion column disappeared as a fighting formation, and the company column, and finally the fighting in close order, with a few exceptions, gave place to the extended order method of fighting.

The extended-order method of fighting is taken up more than ever with the question whether the action is now to be begun in long, thin skirmish lines, or in single groups with great intervals between the men, filling up the skirmish line gradually.

But it happens so often that an official hint will, through too much zeal, produce such consequences as were perhaps not at all intended by the authorities.

If the bringing forward of the skirmishers toward the enemy with the smallest possible loss, and again the protection of the parts in close order from losses, are considered the essential part of the question, I answer forthwith that the essential part lies in quite another direction. It lies in the question: How can I generally bring the skirmishers forward and in what condition? I will of course not deny that the question of form is extremely important, but when the real essence is pushed aside and another substituted therefor a wrong road will be taken from the very first. The form can never decide. The condition of the troops does that.

Let us now examine in detail the attack as imagined by the advocates of innovations carried out this summer on the drill grounds, training grounds, and on the terrain, and also in larger maneuvers,—in which case we shall for the present consider the infantry only.

THE ATTACK.

(1) THE CONDUCT OF THE SKIRMISHERS.

On a large scale the reconnoitering is done by the cavalry and the general staff officers in advance. It is nevertheless necessary, before the troops proceed to the attack, that infantry patrols try to steal up, or, still better, around the enemy's position, in order to gain as much knowledge as possible as to the line where the hostile skirmishers are really lying down. Not a great deal will be learned by this, because the enemy will do the proper thing by throwing forward small detachments to make the approach difficult.

The deployment for action usually followed, in the practical experiments, at an enormous distance from the position which was supposed to be occupied, very often at 2,000 meters and more. It is self-evident that the battalions must be broken up earlier into smaller units (concerning this later), in the face of the long-range artillery fire.

When the position of the hostile firing line can not be determined through patrols, there are no objections to pushing forward a weak skirmish line, as our regulations (II, 22), also recommend, to feel ahead and discover the position, except that this deployment has, to a certain extent, the character of a reconnoissance in force; it is, however, exceedingly desirable to avoid it if it is at all possible to do so.

But the innovators now demand *for the purpose of the attack*, even from the beginning, a quite thin skirmish line, advancing in single groups, and on the maneuver grounds an interval of 6 to 10 paces between men is to be seen. I even read in one work 10 to 15 paces.

It should, however, be remarked that some want to form a thin skirmish line of this charcter for an attack over bare plains only; while others even want to use it on covered or broken ground. Let us assume open ground. Suppose now a group of 12 men, who advance with intervals of 10 paces, it has a front of 100 paces. Is that still a group? But even if only 7 paces are assumed there will still be a front of 77 paces.

We have recently seen expressions in a new work which describes it as pessimism to call attention to human weaknesses in this instance. But one need not be a pessimist to declare that there is no army in which every man is a hero, and that human weaknesses are more easily overcome by keeping together, whether it be in swarm of skirmishes or in close-order formations, entirely aside from the fact that there can not at all be a question of *leading* such a group with a front of 100 paces. A platoon will, therefore, when it has five groups, have a front of between 400 and 500 paces.

No, our men showed, on the whole, in 1870–71, even under the fire of a superior rifle, that they were possessed of a magnificent warlike spirit; but they must not, in the future, on account of fear of losses, be placed in such situations as will diminish, to a great extent, the influence of the principal factor of the moral element—that of the officer and noncommissioned officer. This might prove extremely fatal in the case of reserve and landwehr organizations, as examples from 1866 and 1870–71 have shown.

The men are now to approach the enemy's position creeping, running, and stealing over the ground, singly or in groups. The group is now to close in, according to the ground, now again to extend more. I have, as regards the individual advance, my own opinion, which may easily be guessed from what has been said above. It is, however, most difficult of execution, even on open ground.

The closing together will be most easily effected, because, if there is, for example, a height or a depression visible from afar, the men will, while closing in obliquely toward the front, hurry to reach cover. The extending again would go less quickly, because it means real heroism to require the man, in leaving cover, which is already difficult in itself, to now separate himself from his comrades and, so to speak, "soar in the air" alone.

All such matters are quite nicely arranged in maneuvers, but it is not a "striking proof of the Boer attack," as amateur reporters on maneuvers write. A conclusive proof of the usefulness of an innovation, or any formation whatever, can certainly never be arrived at by means of maneuvers. But, then, neither should a conclusive proof be spoken of, and just where the psychological element is seen pushed into the background, the usefulness may be strongly doubted. It might be answered that the psychological importance will even disappear when the soldier sees that few losses occur. To this may be replied that the feeling of being compelled to advance alone, without a support near at hand, without encouragement, will cause greater unsteadiness than would be the case on account of greater losses in the beginning, since the soldier will be less affected by losses when in company than when alone.

Moreover the number of the unsteady (we use this expression) will increase considerably in this widely extended line, which is worse than to suffer heavy losses through the enemy's bullets. The living who remain will often dishearten the comrades advancing from the rear, more than the brave dead.

It must seem a quite peculiar argument in favor of the employment of this weak attacking line, to assert that the enemy will often not fire on these extended groups at all. The defender will either push forward similar detachments against them into the ground in front of his position or will direct a mass fire on them for a short time; or, again, will drive them back by means of a small sortie and thus put a check on the attacker from the beginning. He will under no circumstances let this line approach close to himself.

Now, it is said that even a thin skirmish line would be able to repulse such an attack. This is certainly not believed. Yes, if the skirmish line lies behind a good cover, it is another matter, but even then such a weak line would probably be overwhelmed.

But the principal matter is that this weak line can produce no fire effect, or one much too small. This the innovators also admit, and the skirmish line is therefore to be strengthened as soon as possible. Weak and widely extended groups are likewise to push into this quite thin first line. But the reinforced line is still very weak. After the first reinforcement on open ground, altogether irrespective of the losses suffered, the men would be lying down at intervals of 5 to 6 paces, consequently still too scattered to deliver an effective fire against a covered defender. A reinforcing, repeated several times, is therefore necessary in order to bring the firing line up to the required density. Now, this is, in any case, a very slow procedure, and if it may be admitted that the first reinforcements, which advance so widely extended, will perhaps suffer smaller losses than a thicker line, so will this be equalized by the more frequent repetition of this movement.

It is asserted in one work that if this method is slow it matters little, because "*there is plenty of time in war.*" This is certainly a remarkable equalization of war. The Saxons at Saint Privat, the Second Army at Königgrätz, and the Prussians at Belle-Alliance did not at all have time to come to the assistance of those already fighting.

For all these reasons the immediate deployment of a moderately thick skirmish line, as heretofore, seems far more preferable. If it will suffer a few more losses than the quite thin one, it lessens, on the other hand, the enemy's fire and weakens it; then, when the human weaknesses of the attacker are pointed out, this must also be done in the case of the defender, who calmly delivers his fire against the thin line of groups that can harm him very little, but will always feel the fire of a denser line.

This deployment of weak forces and gradual reinforcement is, on a small scale, quite the same as the *droplike pushing-in of whole organizations on a large scale*, of which the action at Montebello, May 20, 1859, on the Austrian side, will always remain an unforgettable example.

Through the frequent reinforcing, a great mixing up of organizations takes place from the beginning. Now, I was one of the first, who, after 1870, advocated the practice of pushing reinforcements into a line, because very often nothing else can be done in an action, and I have also recommended the throwing in of whole platoons and, according to circumstances, larger units also, partly to replace unavoidable losses, partly to carry the firing line forward in a new rush in the crisis of the action; but I have never denied that it is better to mix up the organizations as little as possible, for which reason it may also be of advantage to leave greater intervals between the platoons and sections, when the ground permits, in order to keep these at least in the hands of their leaders. But by the method just described a mixing up will take place from the *beginning*, making more difficult the leading, which must, on account of the great extension, disappear altogether.

In the forties and fifties a section deployed, at a signal, as skirmishers in front of one-half of the battalion; other sections were pushed in little by little. Although it is a fact that the conditions are now different from then, we do, nevertheless, in this matter move within a *circulus vitiosus*.

When it is demanded in one work that a rearrangement is to be made in the skirmish line, it is directly contrary to the fact that officers and noncommissioned officers are to lie down in action. How can the officer in this case effect a rearrangement? I should like to see it in the noise and the whistling of bullets in real action.

In this connection I will here finish with the lying down. When the officer has led his platoon and the noncommissioned officer his group into position, and has placed it there with a proper fire front and reasonably under cover, he may throw himself down and observe in that position the fire as well as he can, but as long as that is not yet the case he must lead and improve. But this he is not able to do lying down. He will be just as unprepared in the lying-down position to exercise the necessary influence when there is a question of rallying a retreating group; then he must even expose himself. But there is not always a Biehahn among the men. Who was Biehahn?[a]

It is very proper that the officer should also lie down under cover during peace exercises, and not always be compelled to stand like a knight behind the platoon firing. But there are moments when he must influence his men by the example of special disregard of danger. But when the cringing is to be carried to the extent that—as one work recommends—the battalion commander, motioned to by the regimental commander, who is lying down on a hill, is to creep up the hill until he comes to the regimental commander, this can but make the very worst impression on troops who see or hear of it. Even in action we must not forget attitude and dignity.

We brought with us the advance by rushes from the war of 1870–71. That came entirely of itself. I was present, as the

---

[a] Biehahn was a lance corporal in the company which I led into the field in 1870. Having penetrated into the Niederwald on the forenoon of August 6, my company was surprised by the onset of a detachment of Zouaves against my left flank. I made the line wheel to the left and repulsed the Zouaves, but a renewed onslaught made my men give way. While I made the left flank face to the front, Biehahn yelled out on the right: "Shame on you, you men. You leave the captain in the lurch." With that he stepped from cover and fired his shot.

This example had its effect, and the Zouaves were repulsed.

On the drill ground he would have been punished for leaving the cover. He was the first one in the company to receive the Iron Cross, even before his captain.

Fiftieth Regiment was the first to cross the Sauer and was compelled to traverse the 700 to 800 paces, wide meadows between Spachbach and Wörth, under the fire of the enemy, who was in position on the heights of the right bank of the Sauer. The detachments, that had first crossed the Sauer on hop poles, threw themselves down instinctively, rose up again and ran on, and tried in this manner to reach the Hagenau-er chaussée at the foot of the heights.

But since the action in the afternoon took place on the plateau farther to the front, against Elsaszhausen and Fröschweiler, the advance by rushes ceased. The advance was made at the usual pace over open ground, even when a hot fire was received. The panting breast could no longer continue running; it was simply impossible. And this was the case in other places at the beginning of the action, in high corn and in deep plowed fields. And if we now begin the advance by rushes at enormous distances it can not be continued at the shorter ones.

Experience will show that it takes much time to get a long skirmish line to rise, that the running to the front of platoon and group leaders, the raising of the rifles, the loud commands, and the fixing of the bayonet draw the attention of the enemy and make it possible for him to turn his attention to the onward rushing skirmish line, which presents a large target.

For this reason, first of all, the group rushing must be small, because it gets up more quickly and presents a smaller target. Whether the first is correct may be very much doubted, especially in the first stage of the attack, because the group has a normal front of between 70 and 100 paces, and the commands of the leader can be heard with difficulty. In the second place, when the skirmish line is filled up, it will frequently no longer be a group; then the rearrangement is very difficult.

Lindenau believes that the body making the rush should not be smaller than a platoon. This may hold good, as a general rule, for level ground. It will naturally be modified on open ground, and the detachments may just as well be larger as smaller.

In the second place it is said that the rushes must not be too long, and they must be made at lightning speed.

I believe that no rule can really be laid down in this case. Opinions are very much divided concerning this. As we have seen, the English and Austrian provisional regulations prescribe as long rushes as possible. If we again assume level ground—because on hilly ground, etc., the rush, wherever it is possible, must reach the next cover of the ground—a rush of 60 to 70 meters does not seem too long. Only the rule can be given that a complete exhaustion of the men must be avoided. The rushes may be shorter the closer the enemy is approached, but who will prescribe a rule that applies exactly?

As regards the loud giving of commands, it is not impossible that they may be heard by the enemy in single instances, especially at short distances and in fire pauses, like those the Boers made use of to deceive the English. One of our coolest and best officers is also said to have heard distinctly, on the right flank at the battle of Vionville, the commands of the officers of the French Guard. This may be a very exceptional case.

On account of these experiences it is now advocated, even for the most violent fire fight, to lead by means of signals, in close formations as well as on the skirmish line. Is it then forgotten what influence a smart, calm command or a cheering word from the mouth of the captain or other superior has on the men? A smart "Up!" has quite another effect from the raising of the arm or sword. There are situations in which signals will be sufficient, and for this reason troops must be trained to the use thereof, but it is quite incorrect to attempt to forbid commands. The whistle is also more to be depended upon than signals.

The requirement that the next firing station be pointed out to the men before the rush, can likewise very seldom be complied with, since it can not at all be known whether a field of fire from the place lying in front, can be obtained. It is proper that the detachment making the rush should throw itself down, in order to get a breathing spell, behind any cover, although there may be no field of fire. This must be remedied as much as possible in the next rush.

In the work, *The German Infantry Attack*, we meet with the opinion that the group leaders (section and platoon leaders) must in the rush not be in front of their organizations but in them. Here the apprehension that these superiors may be more easily shot down when they are in front is paramount. But herewith is abandoned the old, eternally true principle, that the officer must be, above all, on such occasions an example of bravery, and he must consequently be in front. The above proposition is well meant; it is desired to avoid the loss of leaders as much as possible, but it is a new denial of the moral motives that bring troops forward in war. No magazine rifle can alter this. When the troops do not fire, the officer must be in front of them as heretofore. The falling out of leaders through wounds and death must be compensated for as much as possible by the training of subordinate leaders in time of peace, and that not only among the noncommissioned officers, but also among the men. To be sure this has already been emphasized in our infantry for a long time, and there are a few Biehahns in every organization.

English officers say that their skirmish lines very soon dissolved themselves into isolated groups under the fire of the Boers. Do we now wish to elevate it to a principle?

The innovators further emphasize constantly that the rushes must be irregular in order to confuse and divide the attention of the defender. Such a thing will happen quite often of itself in the terrain. To lay down such a principle seems questionable.

It is furthermore expressly demanded that the unity of the attack be not impaired. We believe that this can at any rate be accomplished with more difficulty with thin skirmish lines and the group tactics, than by the methods used heretofore. If it is difficult to bring the isolated groups forward in this shallow formation, so will, on the other hand, on account of the great difficulty in the higher leading, the danger be easily increased of making unintentional isolated assaults, as, for instance, on July 3, 1866, from the Hola woods against the Austrian position.

If unity of attack is wanted, the means of the leaders for carrying it through should not be curtailed.

(2) THE BRINGING FORWARD OF REENFORCEMENTS AND OTHER TROOPS.

In my opinion the demands of the innovators give, in this case, occasion for greater objections than in the formation of the skirmish line. These demands are, as we have seen, not at all new. They had already appeared after 1871 and found expression in the experiments of 1872, etc.[a]

The thought always held paramount by me is: When it seems unavoidable to allow a mixing up of units to take place in the skirmish line; when, of necessity, we must, as much as possible, put up with all the disadvantages arising therefrom and give full play to the initiative of the lowest subordinate leaders and soldiers, it is so much the more necessary that the subdivisions following the skirmish line, the supports, second line, reserves, or whatever else we want to call them, be kept in close order and well in hand. *If this is not done there will no longer be any reenforcements or reserves.*

What is demanded? The rear lines are to give up the close-order formation, already at 1,200 to 1,400 meters from the enemy, and deploy into groups or thin skirmish lines. Open stretches are to be crossed in a mass. It is asserted that the losses from infantry fire will be small at this time. Why is the artillery fire left out of consideration in this case?

It must be admitted that if a company column once shows itself plainly to the enemy on open ground, a well-placed shrapnel, or the nucleus of the infantry fire, may scatter the company, but the captain or his successor brings it again together with his voice, when the men know that the advance is to be made just so and not in any other manner, as long as they are not in a skirmish line. A battle line of company columns (we very frequently use this expression, which has been tabooed without cause) presents somewhat larger targets, but has much greater intervals than the small groups, and the following line takes a considerable distance. On the other hand, by deploying the companies into groups, thin skirmish lines, etc., the whole field will be covered everywhere with small particles, and the deep cones of the artillery and rifle fire will cause us at least as great losses as the companies in close order will suffer, if not greater ones. But at present the companies are scattered out to a distance at which the influence of the captain can not make itself felt so effectively as is on the whole necessary, just as in the case of the supports and reserve companies—in a word, in the case of troops that are to be thrown into the real action in good condition. This applies not only to the companies of the first line; it also applies to those of the second and third, and increases as the attack progresses, so that large units of troops, regiments, and brigades will soon find themselves in extremely bad condition for the real work of the action—which should certainly come first—and the higher leading must also consequently be impaired.

---

[a] See page 128. I have also shown the perniciousness of these demands in my "Considerations of Military Organization and the Conduct of War." (R. Eisenschmidt, 1897.)

But deployed lines of units of troops in rear have still other great dangers. These have now increased still more since smokeless powder makes it more difficult than formerly to discovery the adversary. I have described them in my "Considerations," just mentioned, and know of nothing better than to repeat them here word for word. It is supposed that the supports follow the skirmish line in a deployed line.

"The skirmish line has suddenly disappeared in a depression. The next following line sees in the high corn no friendly troops in front of it. At this moment the hostile infantry opens fire on our skirmish line, but the cone of fire falls also partly into the open line following it. To the right and left fall dead and wounded. Some men believe that they see the enemy right before them; they throw the rifles to the shoulder and fire; a great part of the line follows suit. The bullets whistle away above the advancing skirmish line, which forthwith halts and throws itself down, and we may call it fortunate if it does nothing worse. The rest may be imagined. The carrying out of the attack will, at any rate, be quite difficult.

"I will be reproached with bringing forward unfavorable conditions in this case—yes, even with presupposing a lack of fire discipline on the part of the troops. There will always be some such men among the best troops. But will unfavorable conditions always be avoided, and will it be denied that practical formations would overcome these difficulties better and more easily? The highest feeling of duty and the best training may be wrecked on impractical formations."

So much for my remarks in 1897.

The formation of section columns, now so often used and recommended on the maneuvering grounds, has different disadvantages under hostile fire. In the first place, it makes marching difficult on heavy ground (plowed field, corn). The column becomes long, makes supervision difficult to the officer who marches ahead, and gives bad men an opportunity to slip away. And then the column is certainly not in readiness to fight in case of any kind of a surprise, unless the enemy advances perpendicularly to the flank, in which case front could be formed quickly by the turn or wheel. It is said to present a smaller target than the company column. But how great intervals can be taken between the single-section columns when large masses of troops advance? The distances can be small only. But when this is the case these section columns will then appear from afar as a compact mass, especially when the enemy is posted somewhat obliquely to them.

I have always called attention to the fact that a company line in two ranks presents a very large object. But we have for a long time been taught that it is above all important never to show deep objects, since the dispersion in depth of the shrapnel and rifle fire at long ranges will be especially dangerous to deep formations. The precept does, however, still hold good, and the section column is very deep.

As regards remaining in column of march as long as possible, which the supplement to paragraph 80, Part II, of *our* regulations recommends, in order to get as quickly as possible, by means of deflecting and turning, the heads of columns in the direction where the troops are to attack, it may be quite practicable under certain conditions, especially in encounter actions. A too long remaining in this formation leads in large bodies to the same disadvantages as I have before mentioned in case of the section column in smaller ones. This can not in this case be made a principle, but to assume the transition formation (the assembly formation) recommended by von Moltke, at the right time, must be the rule.

I found in the *Militär-Wochenblatt*, No. 80, 1902, an excellent article, which illustrates strikingly the breaking up of a company, which is to pass an open place under fire, advancing in deployed groups, following one another at 200 paces, and shows how the company will, in this case, slip from the hands of the company commander; this article likewise points out expressly the dangers of the above method, which is recommended so often.

All this can naturally be shown in quite a different light on the known ground of a maneuver terrain and in imaginative literary sketches, and we should in the same manner be able to help the opposite opinion to its rights.

If we suppose a brigade formed by wings (2 regiments side by side—Trans.) advancing to the attack and that it has, for this purpose, taken such a formation at 2,000 meters from the enemy, that full freedom, as regards the formations, is to be left to the company commanders, and if we further assume that the reenforced skirmish line has come to within 400 to 500 meters of the enemy, then the brigade will be only a mass of particles which are distributed to a depth of about 1,000 meters over the whole field, whose leading is made difficult in the extreme and whose fighting power is impaired.

Quite another sight will present itself if, in this instance, three whole companies from each battalion are deployed in the skirmish line, followed by one company in close order, either in line or in column, and the rear lines make use of the same formation.

That this is impossible on account of the fire fight, is *not at all* shown by the fights of the Boers, since the great losses and the breaking down always took place at the closer ranges only. The Boers scarcely ever shot with their excellent rifles above 600 to 700 meters. It is just in this that they distinguished themselves.

Now, our field-service regulations certainly say very clearly that well-conducted infantry fire has a considerable effect on companies already between 1,500 and 1,000 meters; at 1,000 to 800 meters they are to halt temporarily or move laterally only when the fire of their own skirmishers is to a certain extent a match for the enemy; but at 800 meters they will be able to traverse the fire-swept space only by moving forward or backward, even behind strong skirmish lines.

These rules are laid down in order to counteract the nonobservation of the effects of weapons in the maneuvers. That does not mean that they are to be a positive rule in war. Here quite other factors influence the manner of acting, above all the principle that losses must be endured, when the situation of the action requires it. But in order to justify the breaking up of troops into particles these directions are often referred to. I am, frankly stated, opposed to their incorporation in the field-service regulations, and should wish that the decision in such cases at a maneuver be left to the judgment of the umpire. Every officer must, however, be informed as to the effect of the weapons, as far as that can be determined in peace, and must act accordingly. But in the maneuvers the absolutely imperative dictum, *Here I must hold out under fire, according to the situation of the action,* must have its place. But the Boer war has by no means confirmed this principle of the field-service regulations and the theories of long-range fire. They are indeed built up only on the percentages obtained in firing on the training grounds, and the old but always true idea not to believe these too much must always be kept alive. Since we now have no other measure for the fire effect, it must be reckoned with to a certain extent—no sensible person will gainsay that—but it can never be compared with results in the field and referred to about so: "There (in the field), only such and such percentages have been obtained; we have obtained more (on the training ground)."

(3) THE ASSAULT.

The Boer war has again confirmed the fact that the last act of the attack (the storm) is the most difficult part thereof, by which nothing new *per se* is said, to be sure. It has many times been verified by eyewitnesses that the assaulting troops first broke down right close to the defender.

The question at what distance the charge is to begin can never be quite settled. That is decided by the place. If we assume open ground, the last firing station will certainly not be more than 300 to 250 meters from the enemy, if the troops are to strike him with still some forces. The advocates of the innovations also want to push the detachments forward in close order, after the rapid fire has been delivered, and carry along with them the reenforced skirmish line. They believe that the scattered particles will then certainly come together; when they have come thus far, we press the attack and feel and understand that the assault is now to begin, since it is also advocated in this case to discontinue all loud shouting, and also the commands to fix bayonet and trumpet signals, in order not to draw the enemy's attention. Many also want to discard the beating of the drums.

All these propositions are contrary to the experiences of several thousand years, because at no time are the smart commands, the trumpet signals, and beating drums more necessary than in this case. It should, however, be remarked that the drums will not be beaten when the reserves are able to maneuver unseen to the last cover. Then the drums are beaten first when the charge begins, because surprise is always an important consideration. But if the advance is over open ground, the drums are always beaten; this is and remains a powerful help. Because, which is the organ, through which the nerves are mostly affected in action and the human weakness influenced the worst? It is, above all, the ear. The falling of comrades on the right and left certainly exercises an influence, and when it becomes bad, it has a staggering influence on individuals and troops, but the ear becomes continually exasperated by the whistling and hissing, the dull thud of impact in the bodies of those hit and on the ground, the bursting of projectiles, and finally the crying of the wounded. There are men who harden themselves thereto, a few true warrior natures, to whom nothing matters on the whole, and others who become continually more nervous with the lapse of time. The sound of the drum is a help against this. Something else is heard besides the whistling and the whizzing—the old familiar *storm* march; the whole line begins to move of itself. And when it is said that the beating of drums notifies the enemy of our presence, the tap will, on the other hand, also have a disquieting influence on the weaker natures of the defender.

The assault is not to begin until the adversary is shaken, but as a matter of fact this can not always be discovered. Ceasing the defender's fire in order to deceive the attacker is one of the matters of the Boer war which is worthy of notice, although it has certainly been used earlier here and there, mostly by savage people, and a good deal of the fighting method of the natives remains in the Boer tactics.

Many in all earnestness advance the principle that no assault must, on the whole, be made on a position which is still occupied, but must be delayed until the adversary is "shot out" of it, until he leaves his position on account of our fire effect. This possibly happens now and then, only that it is improbable that the frontal fire will compel him to fall back. If this theory were always followed we might, to our shame and disgrace, be held at bay by a couple of dozen of skirmishers who deliver a rapid fire. The enemy could then in the meantime retire leisurely without having to suffer from a fire pursuit.

No, we must preserve the power of being able to make an assault, and we believe that the Boer war teaches us in many instances that tarrying under fire brings greater losses than an assault. We must now repeat here the old truth that the defender, so far as he is still there, will during the attack aim leisurely at the attacker. The artillery will at this moment scarcely be able to fire any longer on the points of assault. Neither can the support of the bodies lying down on the flanks be effective for very long, because the line of advance of the attacking detachments will soon cross the line of fire of those who are lying down. Only in rare cases will it be different. It is therefore a question of eliminating the defenselessness of the assaulting troops, or at least of lessening it. Now, we have such a means, but we have set ourselves obstinately against it. *That is, the fire while in motion.*

I know that I appear in this matter like a prophet in the desert, but I ought not to be blamed when I here point to the fact that I have in an experience of 34 years as a writer said much which was at first scorned and later accepted as correct.

The opinion has now once more become rooted that firing while in motion is to be rejected, because there can be no question of accurate aiming in that case. We in return ask the advocates of long-range fire whether they believe that there is much of a question of aiming at 1,000 to 1,500 meters, and yet it is now used and vigorously defended.

Accurate shooting is the basis of our training, and there are situations in war where it would be used with great effect, especially on the defensive, but there are also situations in which the stress must be laid on the mass of projectiles. It is self-evident that it must be an aimed mass-fire, as far as aiming is possible at this moment. A good school training will not betray itself here either.

The fire while advancing has been much practiced in two army corps for about twelve years. It was begun at very long ranges and it was desired to advance against the enemy in this manner without stopping,—the so-called "fire or steam roller." This was the most incorrect thing that could be done. The fire while moving can be used at short stretches in the assault only. It is a fact that it will not have the same effect as fire delivered from a lying-down position, or standing and kneeling, but the question may be asked whether the defender will shoot with the same calmness when the bullets fly around his head as thick as hail and stretch many a one down, as when he receives no fire at all. The magazine rifle with its clips is exactly suited to the introduction of this kind of fire.

Not only does the fire cover the defender with bullets, but it encourages the attacker just as much and more than the beating of the drums. The man no longer feels defenseless; he also does something to the enemy at this critical moment.

It is a mistake to believe that the men will not advance under fire. I have already several times referred to the attack of the First Turco regiment, which proceeded with full force in the village of Elsazhausen in the battle at Wörth, where I was present. What was possible for the French, we must certainly be capable of. We had formerly, as is well known, the "fire while in motion" as a companion of the column attack, when the skirmishers were taken into the intervals. The advance proceeded at charging gait; the men rushed forward a few paces, remained standing for a moment, fired their shot and advanced while loading, while other men rushed forward in their turn. This often took place by ranks and at the command of the platoon leader.

When the nature of the multi-loader is considered, it is indeed clear that a rolling mass-fire can be delivered also while moving. The disadvantage that the officers can not remain in front, will be compensated for by the advantage of keeping the enemy down. The supervision from the rear has also its good side. This kind of fire naturally needs more careful training and discipline, but this will always be easier to teach than a lightning springing up of the men for a rush forward.

In this manner the assault will be conducted up to about 30 to 40 meters from the enemy's position. Then follows the signal "Advance rapidly," at which the real charge, with hurrahs, follows.

Try this kind of fire while moving with troops that have been carefully trained on a target range, or, still better, in the terrain against targets placed there, and it will be seen that the results are not at all so bad. But the objects indicated will be attained, even though they be very mediocre.

In such a moment not only the bullets that hit, but also those that whistle past, are effective, and if a great number of bullets go over the skirmishers, they will make the ground lying in rear insecure for the reserves and supports.

We repeat that we do not believe that we have found in this a panacea for the success of the frontal attack, but certainly a means to weaken the power of the defensive in this most critical moment of the action. The leaders have the power of deciding when the use seems practicable and necessary. In training, it is before everything a question of making it understood and of impressing it on the man, that fire while moving is a "storm fire;" that it precludes the halting and taking position in every case. Let him be impressed with the principle: "*To go back under the fire of the breechloader means to die.*"

We shall not speak of the further procedure after a successful assault, since this has often enough been laid down in our regulations and in practice.

Every assault must go recklessly straight to the front. The flanks must, however, be protected as much as possible by troops that remain lying down or are kept back; as also the advancing echelons against the defender's counter attacks, which may be advantageously launched against the flank of the attacking troops. The adversary's counter attacks in front will certainly be made difficult through the fire while in motion. That the attacker, as soon as he perceives the defender's movement, halts and receives him with fire is self-evident. If the counter attack is repulsed, it is advisable to follow rapidly those that retreat, and, wherever possible, penetrate into the position at the same time as they.

VII. EXTENT OF FRONT AND BATTLE TACTICS.

The highest aim of leading in action is always unity. There is scarcely any difference of opinion as to the fact that it must now be attained by other means than formerly. Yet, when a radical upheaval is caused in the tactics of the principal arm, the leading will be made extremely difficult. The so-called Boer attack, which the Boers made very seldom, we have patched together from the unsuccessful attacks of the English and the very rare cases in which the Boers attacked, and the careful use of the ground, as was enjoined already in the "Waldersee method." I will not deny that it is properly applicable to many situations in action, but this will be the case principally in detachment warfare, in which the encounter of smaller masses is presupposed. Now, many persons have asserted as early as 10 years ago that we are basing ourselves too much on the smaller maneuvers (in brigades and divisions) and have modeled our tactical methods too much according to the detachment warfare, and it has many times been held forth that we must train our infantry more as "battle infantry."

I have stated in my works that there is much exaggeration in this difference. I do not now hesitate to assert that the so-called Boer attack is not applicable in war as we must conduct it in Europe—that is to say, for battle in general. We have already pointed out sufficiently often in the course of our treatise the differences, proving this view, of the battling armies, the climate, and the country, and the evil consequences of the breaking up have indeed been taken into consideration, but there is here before everything a question of the *extension* which the line of battle must take when we adopt such infantry tactics. It is demanded that the authorized extension of the company be increased to 100–150 meters, that of the battalion to 400 meters. We will not, as has been done on occasions by other military writers, institute an exact calculation of the extension of an army's line of battle. To such an extent calculations do not, as a rule, agree with reality, and the argument may besides be advanced that the group attack is declared to be applicable to the open plain only, but that a battlefield of the present extent shows very varied features of ground.

But it must be taken into consideration, before everything, that by using the group attack, in which an interval from man to man of 10 and even 15 paces is to be allowed, the limit of 150 meters for the company will be exceeded. Single army corps will perhaps find open ground in front of them—as, for instance, the Guard at St. Privat. Let us suppose that an army corps is to proceed with the group attack over such ground and hold back for the present 1 brigade, whether on orders from the corps or proper division, and employs 3 for the attack; and it is probable that at first 4 battalions for each brigade form the firing line, or a total of 12 battalions, while 2 from each brigade, or 6 altogether, follow as reserves. This will therefore give—while keeping back such strong bodies—an extent of 5,310 paces, or 4,946 meters. In this case 30 paces interval between battalions is assumed.

At Sedan the front of the Fifth Army Corps and that of the First Bavarian amounted to about 2,000 meters for each; that of the Guard Corps about as much. At Wörth that of the Fifth Corps, 2,100 meters; at Vionville that of the Third Corps and the Thirty-first Half Brigade, by deploying all the brigades under exceptional conditions, 5,000 meters; the Guard Corps, at Gravelotte-St. Privat partly mixed up with other organizations, about 4,000 meters; that of the Seventh Corps, roughly, 2,500 meters; of the Eighth Corps, 2,100 meters; of the Ninth Corps, 3,500 meters; the whole line of battle was, in the above-mentioned battle at 7 o'clock in the evening, in round numbers, 17,000 meters long, counting in the organizations on the extreme flanks.

Imagine the extent of front of still larger masses on the basis of the elementary splitting up in the group attack, even when it takes place only in part. We would be satisfied if it were probable that we would gain the victory by it, but our statements concerning the mixing up of units, the decreasing of the influence of the officers, makes the adoption of the group attack for large operations seem a serious danger. And we are, according to the expressions of many books and the conditions of many exercises, on the best road toward making a new routine thereof. The "Gentlemen, I want to see thin skirmish lines only" is said to have been heard often already on the training grounds.

These doubts have already been expressed by several war-experienced officers, because that which can not be learned in peace is the insight into the influences of the action on human nature and the weighing thereof. But the leader, also, is not at all free from these influences; in fact, he is, perhaps, exposed to them to a still greater extent, because on him rests the heaviest and most enormous responsibility. At the present there is a question of the existence or nonexistence of nations, at least of their position and future. Now, although modern leaders may be imagined as exercising their influence ever so far behind the line of battle, leading according to the map only and removed from personal danger, the leading will always remain difficult with so great an extension, in spite of all the methods of modern times. And although he does not belong in the first line, the emergency will nevertheless not infrequently arise to compel him to proceed to a point where a crisis is taking place and make his personal influence felt there.

The lesson which all great leaders of all times teach us is, to keep back strong reserves for a decisive stroke. This lesson can not at all be set aside by the advance of separate columns for cooperation on the battlefield. The stroke of the reserve, with strong swarms of skirmishers in front, will be effective when the opposing forces have tired themselves out by fighting all day long. It is correct that they will be best employed for a turning movement, but their direct stroke in the evening of the day of battle is also quite conceivable. The fresh forces will cover the last stretch with a rolling fire while moving. But the forming and use of the reserves will be made difficult by an excessive extension.

Although the most careful training in the use of ground in small bodies and in the execution of the rush is correct, we must not lose sight of the requirement of moving large masses of skirmishers and the bodies following them. They must know how to keep the direction of the march without crowding or opening out, and still use the ground to the fullest extent. According to my opinion, not the group attack—which may be good under many conditions—but the training therein should occupy our attention the most. But to this belongs unqualifiedly the maintenance of the principle of maintaining contact. It is an old fact that all these things may be modified to a certain extent by the ground. For this we have sufficient intelligence and feeling of responsibility in our corps of officers.

If, therefore, the greatest extension of the company may be laid down as 150 meters, and that of the battalion as 400 meters for special cases, we can not join in the demand for more roomy spaces for more important situations—that is to say, *a greater extension.*

VIII.—INNER MOTIVES—THE USE OF FIRE—MEANS OF DEFENSE: TACTICS AND FORTIFICATIONS.

The innovators do not quite eliminate the disadvantages which the group attack carries with it, since they point out the fact that the moral qualities of the individual soldier must not only be preserved by means of the most careful training, but must be amplified in sense of duty and honor, love for the reigning family and the fatherland, strict obedience, etc. All this has indeed already been required and striven for before. But we must here, of necessity, pass to a general theme, because the people and the army are inseparably connected. Why was the moral element so excellent in the army with which the great Emperor took the field? Because the patriotic and monarchical sentiments, the military spirit, and the strong sense of duty were still rooted in the people—strongly united by the education of the general liability to service, which had been in force for half a hundred years, and of a public school, the effect of which was certainly estimated too high, but which usually worked into the hands of the army. On what account were the Roman armies feared so much at the height of their power? On account of the strict discipline in the State, founded on the discipline of the home, where the father of the family ruled almost absolutely. This was the source of Roman discipline when the State was at the zenith of its power, and this reciprocity between the people and the army must exist at all times. The general liability to service is useful only on condition that the foundation of authority in State and family and the warlike spirit of the people—to be distinguished from the Chauvinistic, to be sure—remain unshaken.

Are we still situated in this respect as under the great Emperor? The greatest optimist will certainly not be able to answer this in the affirmative. So much is always said in regard to the influence of the press, but in this respect no importance at all is attributed to it. Several million copies of the social democratic papers are now distributed daily in Germany. They do their best to change the facts to suit themselves; to disparage our reigning family and the reigning families of other German states; to abuse in their graves our greatest men, above all the venerable great Emperor and Bismarck; to defame the corps of officers, undermine the love for the army and heroism, and, in league with the ever enduring "peace men" and "women," characterize war as a crime and the preparation of the fatherland as a devouring "Moloch."

A too far-going humanitarian tendency in lawgiving and in that public opinion which sees in crime a disease only, the un-sound sympathy for the criminal connected therewith, and finally the influence resulting from the virtual emancipation of quite young people from parental restraint on account of early employment in factories, contribute to undermine the sound idea of authority.

But it is really not believed that all this must finally undermine that spirit which fought our battles, and that the army can not undo all this in a short time of service. To train men who are permeated by such poison to become such steady soldiers as the dangers of the group attack demand, would be quite difficult.

There is still a redeeming feature at a time in which the conditions of army discipline seem to be in a state of decay among the people, namely, that the successor of so many great monarchs remains true to the traditions that become a soldier, and that the other German princes follow, to a greater or smaller extent, the example of the Hohenzollerns. This does not at all mean that he is to be a soldier only. But a monarch like Louis XVI, who never wore a soldier's coat, would have been a lost man in the present time.

The question has again been raised whether the "drill" could be relaxed somewhat in favor of the training for fighting in extended order. In this question the greatest circumspection must be used, because the habit of strict drill of the individual and the rigid exercising of troops, is to us a guaranty for keeping together the units in close order in action. According to my opinion, we can not, for instance, give up marching in strict cadence in small and large bodies, although it may not often be possible to use it in the field. It is a means of discipline, and in this case the inner and outer motives coincide. The proscription of all undue stress laid on drill must, on the other hand, be strictly carried out. To attain good results in parades should never be the only thing aimed at.

The German soldier does not give much for long speeches and harangues. A few vigorous words suffice before the battle. We should also, in time of peace, limit ourselves to a certain brevity during instruction in fighting. Some principles will be given which will make clear to the man the situation in which he may happen. Thus, for instance, that *he will be a dead man if he turns tail during the charge.* "To retreat under the fire of the breechloader means to die," I wrote in 1869, and although everybody does not really die in this case, yet the idea must be impressed on the soldier. This has more effect than the finest speeches about sense of honor and duty, if suitable words are not, on the whole, spurned in this case. But everybody has not the faculty to express himself impressively and briefly.

As regards the fighting discipline, fire discipline is an important part thereof. This is closely connected with the use of fire. If the principles are incorrect here, the maintenance thereof will be very difficult.

It was a wrong procedure when it was formerly desired to control fire by designating a number of cartridges. It was the same with the extensive use of swarm volleys.

But in this matter the Boer war gives us a lesson, or rather, it confirms old lessons. We have always maintained the principle—the use of fire at the shortest possible distance—and even advocated for this purpose to go to a certain extreme in this matter in the instruction of the soldier in order to attain the greatest possible result. It is now evident that the ranges must be extended on account of the introduction of improved weapons with their long ranges and other advantages, but they can be increased only so far as the human vision reaches. If the officer can work with a field glass, every soldier can certainly not be given one. The proposition to give one to each noncommissioned officer goes also certainly too far, because his task is principally to keep his group in order. The oldest noncommissioned officer in the platoon might at any rate be provided therewith, in order to take the place of the officer should the case occur.

Now, first as to the attack. The officer can merely designate the object, in the case of a lying-down enemy at distances over 700 meters, at which the fire is to be directed, and whoever has had war experience will know that even this fire will, in fact, be mostly a shooting into the air. We will not dispute the fact that the ground is made insecure thereby, but can this compensate for the other great disadvantages of long ranges? We have pointed this out so often in other works that we can be brief here.

In the first instance, therefore: waste of ammunition at long ranges—lack of cartridges at the really effective range. This danger was already present with the single loader. It will, however, be counteracted by the principle, "Shoot close." That is a principle which is very comprehensive to the private soldier, the usefulness of which for the fight he understands.

The advocates of long-range fire now assume, on account of target-range results, a superior air, and refer to the advocates of short-range fire as unprogressive, because, they say, the fire of the defender will make itself felt already at long ranges to such an extent that it must be answered. But it is just here that the soldier's training must begin as soon as possible by inculcating the short principle: Advance as close as possible, otherwise you will not hit. The troops must be able to hold out and advance without firing. This is also expressly emphasized in our regulations and is advanced as a principle. Now, at what distance it seems proper to the leader to open fire, whether it be because the enemy presents greater targets or whether he, in concrete cases, considers replying necessary, must be left to him, but the principle must be before him and he must take it into account as much as possible.

The newest tendency is directed toward affording the initiative of the individual soldier a still greater latitude. It is not only to be left to him whether and when he wants to fire, but he is also to take his elevation and holding point at pleasure. We have opposed strenuously in our time the exaggerations in the conduct of fire, which aims to make a skirmisher of the man in ranks, and we have often practiced uncontrolled fire on the target range. But when this is considered most effective, I believe that it is too far on the other side. Ideal shots would be needed if this were correct, and these we have not now and will never have. And I believe for this reason that there can be, for lying-down and kneeling targets, only one holding point in war, and that is: Constantly at the bottom of the object. However much firing results obtained in time of peace may be quoted against it, this holding point is the proper one in war.

The use of fire is naturally different in the prepared defense. In this the distances are marked, and longer ranges are permitted for this reason. The ammunition carts will already have emptied their contents in the rifle pits, and the ammunition columns will be brought forward. But here also it will mean that we must remain conscious of the fact that there is a requirement of obtaining an annihilating effect, and this can be obtained only at the middle and short ranges.

The question may very well be agitated whether the shooting ability of our infantry can be increased. I do not believe that a still greater increase of the target practice exercises is possible without hurting other service matters. Accustoming the eye to detect small objects and an early beginning of firing on warlike objects can alone have any influence in this matter. Although the shooting ability of the Boers may have been greater than that of our infantry—many even dispute it—it certainly seems to me that one of the greatest merits of their successes, as far as they are on the whole attributable to fire, lies in appreciating the practical rules which they had learned in hunting and fighting with savage peoples, and these are: No waste of ammunition, fire at short distances.

The deployment of the Boers for action, very often in one single long line, as, for instance, at Modder River, is worthy of our imitation in exceptional cases only. It may happen that everything will be deployed in order to hold this or that point against superior numbers. We have already shown in our consideration of Modder River what disadvantages this may have. On the other hand the construction of the shelter trenches, and the disguising thereof, as also the throwing up of such trenches at nondefended points, are worthy of study.

With the exception of quite isolated cases (especially at Spion Kop, January 24, 1900), the Boers were, as we have shown, in the first two periods of the war, purely on the defensive, from which a tactical result can certainly be gained, but never a defeat of the attacker.

The Boers showed a real attacking spirit only in minor operations, and fine deeds are to be recorded here, just as at Majuba Hill in 1881. This climbing of steep slopes covered with boulders and sudden attack on the surprised English, as at Tweefontein—*that* is the real Boer attack. In modern times the smaller operations of war have been more practiced, and that is right, because the weakness of our communications will assign an important rôle to them. Mounted infantry or cavalry with machine-gun detachments and good firearms seem the most appropriate arms for them.

IX. SOMETHING CONCERNING THE OTHER ARMS.

ARTILLERY.

Although this work has taken for its object the elucidation of the group attack, it is, however, not amiss to say a word concerning the manner in which the other arms have shown up in the Boer war.

For the last 10 years there has been a more and more decided manner in speaking of the increased effect of the artillery, which has, indeed, nearly kept pace with the rifle in technical improvements. Many went so far as to see in it the principal arm of the future. It is not necessary to show that this is an exaggerated illusion. It is a glaring contradiction of the reality of war. It may be the principal weapon in certain instances in battle, but not as a rule. But the very great increase of the artillery in all states, and especially in Germany, demonstrates the value put upon the arm.

The general failure of the English artillery, notwithstanding its mass fire, is certainly calculated to put a damper on extravagant expectations as regards its effect against well-posted infantry in a fortified position. Consider that artillery, far superior in numbers, obtained—often without having a single gun reply to it—virtually no effect with its mass fire, and that notwithstanding a fire lasting several hours.

But we have already pointed out that the nature of the country was largely responsible for the failure. Many actions took place in the often-described mountainous tracts, which offered most excellent cover, made aiming difficult, and consequently greatly decreased the effect. The Boers had, conformably to their method of fighting, behind their thin line no massed reserves against which the curved fire of the English might have been effective. Thus the losses of the Boers were diminished.

But, on the whole, the small results of the English artillery point to the customary use of curved fire, which admirers of the uniform caliber and the "alone saving" shrapnel have not so long ago discarded entirely for the field artillery.

The cultivated regions and central mountains of Europe present cover for masses of troops that can be swept with curved fire only. It should not be overlooked that the English artillery did obtain great effect everywhere with concentrated fire in the nonmountainous regions, as in the action at Riet River against the right flank of the Boers.

The isolated artillery positions of the Boers suited their general tactics. They would, notwithstanding their better material, soon have been worsted in the artillery duel, if they had wanted to employ a kind of mass tactics. They appeared here and there in the terrain with two to six guns and were called upon to fire in certain instances only. It was a kind of artillery skirmish tactics.

It is more than 12 years ago that our artillery adopted the fighting method of taking the greatest possible advantage of the ground. The muzzle is to be seen only just above the crest. Much has been written concerning this. Who would say anything against this if positions suitable thereto are at hand and the absolutely necessary mass effect of our artillery is not interfered with? Long, continuous lines are not always necessary to obtain this mass effect, but the effect may be obtained with groups from different positions. Nobody disputes this, but the principle that the cover should interfere neither with the effect nor with the rapid opening of the fire has nowhere a greater importance than in the case of this arm. If such cover is not found, the unlimbering must be done as formerly, and "the shells must be the best cover," as General von der Planitz is alleged to have said.

Consequently we learn from the Boer war, as regards artillery, that we must guard against overestimating our firing results in time of peace.

Still a word concerning armored field artillery.

We have recently heard the decided opinion expressed by a competent authority that armored field artillery, like that which the French now possess, will be decidedly superior to the unarmored. The shields will also afford such a cover against infantry fire that the artillery can advance unhesitatingly nearer to the infantry than heretofore.

This might be concurred in, but experiments are already under way to invent a shell which will penetrate the shields. This is said to be the case with steel shrapnel bullets. We would thereby enter into the same stage of the struggle between armor and gun as in the navy. But since in the field artillery the armor could certainly not be strengthened to the same extent as in the navy, because the guns would otherwise be too heavy and too little mobile, the victory of the gun seems undoubted in the end. On account of the penetration, the position of the caissons beside the guns, also adopted by the French, would be quite a dangerous arrangement.

Therefore, the lessons applicable to our conditions that we can still learn from the Boer war is the experience that the armored part of the Boer artillery had the advantage of an unarmored artillery inferior in effect; further, that the defender in a strongly fortified position may do well under certain circumstances to avoid the artillery duel altogether, and first put his artillery into action to repulse the enemy's infantry attack; but above all, that the piecemeal coming into action of the artillery, as that of the English at Colenso and Magersfontein, without previous reconnaissance of the enemy's position, is altogether faulty. The union of the arms must be maintained and the infantry must, in case it is necessary, engage to such an extent that the occupation of the position becomes evident.

We find no place in this work for other questions of the organization and tactics of the artillery.

CAVALRY.

The English in the Boer war, and we also in China, have many times formed and employed mounted infantry. Thus the dragoons in the old sense of the word seem to have again come forth. But they were not quite the same as the present mounted infantry, because they were also able to attack on horseback, but the mounted infantry uses the horse as a means of transportation only, in order to reach quickly the place where it is to act dismounted with its fire. We contend that we do not need it in Europe, since our cavalry with its excellent carbine is able to produce the same effect.

It is indeed asserted that the English cavalry made only one attack, that at Elandslaagte; that it performed the reconnoitering with incredible carelessness, but that it did, on the other hand, take an effective part several times during the advance of Lord Roberts on Bloemfontein and Pretoria, by means of turning movements and threatening the enemy's flank. Nothing is heard of a lasting pursuit, which was possible, for instance, at Modder River, but, on the other hand, the rapid dash of General French—a general who did, on the whole, perform conspicuous service—for the relief of Kimberley is worthy of mention. How important is good training of men and horses was shown in the action at Tweebosch, where Methuen was wounded and captured; the badly trained new English cavalry scarcely reconnoitered to a distance of a few hundred paces.

In this action the galloping up of the Boers to within a few hundred meters of the English infantry escorting the train, in open order to fire, is of interest, because it was thus demonstrated that cavalry is still able to advance to such distances, but in this case it must certainly be taken into account that the line of infantry escórting the train was very thin.

Now, as the new fighting regulations for the combined arms show, the English have drawn this conclusion from the war,—that the rôle of cavalry in the action itself extends principally only to threatening the enemy's flanks with dismounted men. There is, therefore, no question of an attack, but simply of taking the fullest advantage of the enemy's mistakes. The rôle of the cavalry in the pursuit is similarly emphasized as it is everywhere.

Although it must be recognized absolutely that the action of cavalry against infantry is limited on account of the continued improvements in firearms, the varying skirmish fight will, however, present instances which it seems very possible to utilize for an energetic stroke. In the pitched battle, according to my opinion, it will be practicable only with smaller masses; in the pursuit and in the actions of cavalry against cavalry, which take place before the front, with larger masses also. The English fighting regulations, therefore, seem to carry the depreciation of the cavalry attack very far.

The cavalry is the arm for reconnoitering. But although it may have driven the enemy's advanced cavalry divisions from the field and then receives fire, it is, however, in covered and mountainous stretches of ground unable to discover what it has in its front, whether dismounted cavalry or infantry. Reconnoitering has become still more difficult since the adoption of smokeless powder. Reconnoitering forces must therefore frequently resort to fighting on foot in order to obtain passable results. This is one of the most obvious deductions of the Boer war, in which the English cavalry was of so little use in reconnoitering.

That the Boers often neglected the mounted reconnoitering service, and avoided reconnoitering to long distances, is attributable to the lack of discipline which manifested itself so frequently.

PIONEERS.

At the present time the infantry everywhere is capable of constructing the necessary field fortifications. The Boers have again shown that pioneers are not necessary for this. On the other hand, pioneers must remain the teachers of the infantry, and must therefore exert themselves continually to perfect the practical instructions for the construction of field fortifications. For this are necessary a complete tactical understanding and knowledge of the science of firing. The concealment of the rifle pits is especially to be considered. Practical experiments as to how far the construction of tiers can be carried, are very much to be recommended.[a]

The sieges of Kimberley, Mafeking, and Ladysmith consisted only of surrounding, together with bombardment; there was never a question of a real attack. The Boers lacked pioneers and engineer officers. The evacuation of Pretoria, which city was intrenched by means of forts, was correct. If the Boers should have defended it, they would have been compelled to throw in there their whole still disposable fighting force. The English would have besieged it in the proper manner, and resistance would have ceased with the fall of Pretoria.

THE TRAIN.

The train, and with it the English intendance, accomplished great things, especially in the second part of the war, considering the extent of the theater of operations, the limited resources of the country, and the threatening of the communications. It is worthy of a closer study.

---

[a] We conceive the experiments thus, that two shelter trenches be thrown up on a slope, one behind the other, a line of lying down skirmish targets be placed in the lower, the enemy at 600 to 700 meters being represented by targets, and fire be opened from the upper, occupied shelter trench. It could then be verified whether the lying down targets in the lower trench have received any shots, and an approximate basis would be had as to whether such a procedure would be possible in the field and at what distance apart both shelter trenches would have to be on a steep slope. We consider it as altogether excluded in the case of a gentle slope.

RÉSUMÉ AND CONCLUSION.

1. A frontal attack over open ground is difficult and should, for that reason, be avoided as much as possible, but is, with a proper use of the troops, and due preparation, never to be regarded as impracticable.

2. The phrase, that open, level places can not be entered under hostile fire, is pernicious, because it tends to weaken the spirit of the initiative.

3. An advance by groups may be used in case of special forms of ground, and principally in small actions or in the partial actions of a battle. But this is something different from the group attack now proposed. This will, as a rule, lead to a too great extension, a weakening of the influence of the leader, and an early mixing up of the units in large battles.

4. The initial fire effect is too small. The drop-like pushing in of reinforcements (filling up) can not remedy it.

5. Therefore the deployment from the beginning, on any kind of ground, of strong skirmish lines is necessary.

6. They are to advance on open ground by platoon rushes, which are to be carefully practiced.

7. The length of the rushes on open ground to be not less 50 to 60 meters; on intersected and hilly ground according to the localities.

8. The units, pushing in, act, according to circumstances, either with fire or carry the skirmish lines with them to a renewed advance.

9. On open ground the charge (assault) takes place at charging gait with rapid fire while in motion. The bayonet will be fixed at 500 to 600 meters from the enemy. The last 30 to 40 meters will be covered at a run without firing.

10. The organizations of the second and third lines follow, either in groups, in deployed lines, in ranks or sections (it may be that an obstacle compels such a formation), or in company columns or in line. In this case a line, shortened by one-half, may be formed by placing the second half platoon in rear of the first.

11. The organizations in close order, belonging to the first line, keep on open ground a distance of about 200 meters from the skirmish line.

12. But the organizations intended for the assault must be brought up in front of them close to the skirmishers, in case the skirmish line does not by its own initiative take advantage of a favorable moment for the assault.

13. It is permissible to extend the deployment of a company from 100 to 150 meters and that of the battalion to 450 meters. If the conditions require the development of the whole fire power at once, the battalion may be deployed to the last man.

14. The use of fire at the shortest possible distance is to be impressed on the leaders and troops again and again. Exact distances can not be laid down therefor.

15. In the case of the higher leaders the principle "strong reserves" is continually to be taken into account. The skill of Napoleon the First to wait with the distribution until a crisis becomes clearly perceptible, must be revived.

Looking back on a time which has seen such radical tactical and technical changes—it is only necessary to say the words "smoothbore musket and magazine rifle"—including at the same time the great war events of 1854, 1855, 1859, 1864, 1866, 1870–71, and 1877–78, I have since 1868 taken part in representing and considering the events, and have on that account received much recognition, but have also been much contradicted, as is certain to occur with everybody who appears in public.

The never-waning interest of the old soldier for his profession, has prevailed upon me to utter freely my opinion in regard to the last war experiences and their utilization.

BIBLIOGRAPHY.

LIST OF WORKS IN THE LIBRARY OF CONGRESS ON THE BOER WAR.

Compiled for the

SECOND DIVISION, GENERAL STAFF, U. S. ARMY,

Under the direction of

A. P. C. GRIFFIN,

Chief Bibliographer, Library of Congress.

BIBLIOGRAPHY.

LIST OF WORKS IN THE LIBRARY OF CONGRESS ON THE BOER WAR.

Abbott, J. H. M. Tommy Cornstalk; being some account of the less notable features of the South African war from the point of view of the Australian ranks. New impression. London, New York, and Bombay: Longmans, Green, and co., 1902. x, (2), 264 pp. 12°.

Adams, Brooks. America's economic supremacy. New York and London: The Macmillan co., 1900. ix, 222 pp. Map. 12°.

Adams, Charles Francis. The confederacy and the Transvaal . . . a paper read before the American antiquarian society, October 30, 1901. Boston: Houghton, Mifflin & Co., 1901. 25 (1) pp. 8°.

Amery, Leopold S. *ed.* The Times history of the war in South Africa, 1899–1900. 2d ed. Vols. 1–2. London: Sampson Low, Marston and company, 1900–1902. 2 vols. Plates. Portraits. Maps. Plans. 8°.

Archibald, James Francis Jewell. Blue shirt and khaki; a comparison . . . with illustrations from photographs taken by the author. New York, Boston, etc.: Silver, Burdett and co., 1901. 269 pp. Illustrations. Frontispiece. 12°.

Ashe, Evelyn Oliver. Besieged by the Boers; a dairy of life and events in Kimberley during the siege . . . New York: Doubleday, Page & co., 1900. (16), 175 pp. Plates. Portraits. 12°.

Bacon, Augustus Octavius. Resolution of sympathy for the South African republics. Remarks of Hon. A. O. Bacon, of Georgia, citing speeches of eminent statesmen in the Senate . . . May 29, 1900. Washington: [Government printing office], 1900. 16 pp. 8°.

Bar, Karl Ludwig von. Der Burenkrieg, die Russificirung Finnlands, die Haager Friedensconferenz und die Errichtung einer internationalen Academie zur Ausgleichung von Streitigkeiten der Staaten. Hannover: Helwingsche Verlagsbuchhandlung, 1900. vii, 61 pp. 8°.

Barnes, James. The great war trek with the British army on the veldt. New York: D. Appleton and co., 1901. xii, 372 pp. 12°.

Battersby, Harry Francis Prevost. In the web of a war. London: Methuen & co., 1900. xii, 297, (1) pp. Frontispiece (portrait). 3 maps. 12°.

Beck, Henry Houghton. History of South Africa and the Boer-British war. Blood and gold in Africa. Philadelphia: Globe Bible pub. co., [1900]. 493 pp. Illustrations. Plates. Portraits. Map. 8°.

Bigelow, Poultney. White man's Africa. Illustrated by R. Caton Woodville and from photographs. New York and London: Harper & brothers, 1898. xvi, (2), 271 pp. Plates. Portraits. 8°.

Birch, James H., *jr.*, and Henry Davenport Northrop. British and Boers in South Africa; containing a thrilling account of the great struggle between the British and the Boers . . . together with the wonderful story of the Transvaal . . . Philadelphia: National pub. co., [1900]. 488 pp. Illustrations. Plates. Portraits. 8°.

Pages 1–434 pub. also under title "History of the war in South Africa."

——— ——— History of the war in South Africa; containing a thrilling account of the great struggle between the British and the Boers . . . together with the wonderful story of the Transvaal . . . Philadelphia: National pub. co., [1899]. vii, 17–434 pp. Illustrations. Plates. Portraits. 8°.

Blake, John Y. Fillmore. A West Pointer with the Boers; personal narrative of Colonel J. Y. F. Blake, commander of the Irish brigade. Boston: Angel Guardian press, 1903. (2), 411 pp. Plates. Portraits. 8°.

[Boissevain, Charles.] The law of nations and the law of humanity. An open letter to President Roosevelt of the United States. [Amsterdam: Handelsblad office, 1901.] 9–12 pp. F°. (Algemeen handelsblad van woensdag 9 october 1901—Avondblad—Derde blad.) Dated "Amsterdam, 25 September, 1901."

——— Open letter to the Duke of Devonshire. Amsterdam: "[Algemeen] handlesblad" office, [1899]. 16 pp. 4°.

——— The struggle of the Dutch republics. A great crime. (An appeal to the conscience of the British nation.) Amsterdam: "Handelsblad" office, [1900]. 49 pp. 8°. Cover-title.

——— The struggle of the Dutch republics. (Two open letters.) Amsterdam: "Handlesblad" office, [1900]. 56, 93, (1) pp. 12°. Each letter has separate title-page and pagination.

Contents: — pt. 1. Open letter to the Duke of Devonshire.— pt. 2. Open letter to an American lady.

Bovill, John Henry. Natives under the Transvaal flag. London: Simpkin, Marshall, Hamilton, Kent and co., 1900. (12), 82 pp. Plates. Frontispiece. 12°.

Britain and the Boers. Both sides of the South African question. New York: The North American review pub. co., [1899]. (45) pp. Map. 8°. "Reprinted from the North American review."

Contents: England and the Transvaal, by Sydney Brooks.—A vindication of the Boers, by a diplomat.—A Transvaal view of the South African question, by Dr. F. V. Engelenburg.

Britain and the Boers. Both sides of the South African question . . . no. 2. New York: The North American review pub. co., [1899–1900]. (64) pp. Map. 8°. "Republished from the North American review."

Contents: Bryce, J., Historical causes of the war.—Carnegie, A., South African question.—Grey, A. H. G. G. *earl*, England and the Transvaal.—White, M., Blunders of the British.

Briton and Boer; both sides of the South African question, by Right Hon. James Bryce, Sydney Brooks [and others]. New and enl. ed.

New York and London: Harper & brothers, 1900. xi, (3), 309, (1) pp. Plates. Portraits. Folded map. 12°. "Reprinted from the North American review."

L. C. also has first edition.

BRYCE, JAMES. Impressions of South Africa. 3d ed., with a new prefatory chapter, and with the Transvaal conventions of 1881 and 1884. New York: The Century co., 1900. lx, (2), 517 pp. Folded maps. 8°.

[BUNCE, CHARLES T.] *comp.* The real Kruger and the Transvaal; the Britons' side, the Boers' side, the historical facts. Compiled from various sources. New York: Street & Smith, [1900]. (2), vi, 11-218 pp. Illustrations. Plates. Portraits. 12°. (Historical series, no. 12.)

CHURCHILL, WINSTON [LEONARD] SPENCER. Ian Hamilton's march . . . , together with extracts from the diary of Lieutenant H. Frankland, a prisoner of war at Pretoria. New York, London, etc.: Longmans, Green, & co., 1900. xii, (2), 409 pp. Maps. Plans. Frontispiece (portrait). 12°.

—— London to Ladysmith via Pretoria. New York, London, etc.: Longmans, Green, & co., 1900. xi, (2), 496 pp. Illustrations. Maps. 12°.

CLOUD, WILLIAM F. Webster Davis on toast. Facts, not fiction, sense, not sobs, about the Boer-British war, with strictures on the flop. Kansas City, Mo., 1900. (2), 26 pp. Portraits. 12°.

THE COLUMBIAN CORRESPONDENCE COLLEGE. Washington, D. C. The Columbian atlas of two wars; containing large scale maps of the Philippine islands and South Africa. Washington, D. C.: The Columbian correspondence college, 1900. (2), 16, (1) pp. Illustrations. F°.

COMBES, PAUL. Cent ans de lutte. Les héros Boers. Prétorius, Kruger, Steijn, Joubert, Cronjé, Botha, Ollivier, Dewet, Villebois-Mareuil, etc. Première guerre du Transvaal (1881); Le raid de Jameson (1895); La guerre anglo-boer de 1899-1900. Paris: Montgredien et cie., [1901.] ix, 322 pp. Illustrations. Plates. Portraits. Maps. 4°.

COOK, EDWARD TYAS. Rights and wrongs of the Transvaal war. New and rev. ed. London: E. Arnold, 1902. xi, 393 pp. 12°. "Bluebooks referred to," pp. 390-391. "Chronological list of the more important despatches referred to," pp. 392-393.

CRESWICKE, LOUIS. South Africa and the Transvaal war. With numerous illustrations and maps. Edinburgh: T. C. & E. C. Jack; New York: G. P. Putnam's sons, 1900-01. 6 vols. Illustrations. Plates (partly colored). Portraits (partly colored). Colored frontispiece. Maps. 4°.

CROWE, GEORGE. The commission of H. M. S. "Terrible," 1898-1902. London: G. Newnes, 1903. xvi, (2), 370 pp. Plates. Portraits. Map. Plan. Diagrams. 8°.

CUNLIFFE, FOSTER HUGH EGERTON. The history of the Boer war. London: Methuen and co., 1901-1904. 2 vol. Illustrations. Maps. Plans. 4°.

DAVIN, NICHOLAS FLOOD. South African war, the Canadian contingents. A speech . . . delivered in House of Commons February 16, 1900. [Ottawa? 1900.] 10 pp. 8°.

Davis, Richard Harding. With both armies in South Africa. New York: C. Scribner's sons, 1900. xi, 237 pp. Plates. Portraits. 12°.

Davis, Webster. John Bull's crime; or, Assaults on republics. New York, London, etc.: The Abbey press. [1901]. (18), 225 pp. Illustrations. Plates. Portraits. 8°.

Davitt, Michael. The Boer fight for freedom. New York and London: Funk & Wagnalls company, 1902. xii, 603 pp. Illustrations. Maps. Folded map. Frontispiece. 8°.

Demolins, Edmond. Boers et Anglais, où est le droit? 2. mille. Paris: Firmin-Didot et cie., [1900]. 24 pp. 8°. Extrait de "La Science sociale."

Desjardins, Achille Arthur. Le Transvaal et le droit des gens. Paris: De Soye et fils, 1896. 35 pp. 8°. Extrait du Correspondant.

Despagnet, Frantz Clément René. La guerre sud-africaine au point de vue du droit international. Paris: A. Pedone, 1902. (4), 402 pp. 8°.

De Wet, Christiaan Rudolf. Three years' war; frontispiece by John S. Sargent. Four plans and a map. New York: C. Scribner's sons, 1902. x, 448 pp. Plans. Portrait. Folded map. 8°. "The original . . . [was] written . . . in Dutch."

Dix mois de campagne chez les Boërs par un ancien lieutenant du colonel de Villebois-Mareuil. Paris: C. Lévy, [1901]. (6), 267 pp. Plates. Portrait. Folded map. 12°.

[Douglas, Mary.] The Cape and its story; or, The struggle for South Africa, by the author of "Breaking the record," "In lionland," "Across Greenland's ice-fields," etc., etc. London, Edinburgh, and New York: T. Nelson and sons, 1903. viii, 314 pp. Frontispiece. Colored plate. 12°. Added title-page with portrait in colors.

Doyle, *Sir* Arthur Conan. The great Boer war. Rev. and enlarged ed. New York: McClure, Phillips & co., 1902. x, (4), 446 pp. Maps in pocket. 8°.

——— The war in South Africa, its cause & conduct. New York: McClure, Phillips & co., 1902. (4), 140 pp. 8°.

Dulles, Allen Welsh. The Boer war; a history. (3d ed.) Washington, D. C., 1902. 31 pp. 24°. "The author of this history is eight years old."—Preface.

Du Plessis, C. N. J. The Transvaal Boer, speaking for himself. Some passages from "Uit de geschiedenis van de Zuid-Afrikaansche Republiek en van de Afrikaanders." Selected and tr. by R. Acton. 3d ed. London: Jarrold & sons, [1899]. 120 pp. 12°.

Edwards, Neville. The Transvaal in war and peace. London: H. Virtue and company, 1900. iv, 384 pp. Illustrations. Portraits. 4°.

Evans, W. Sanford. The Canadian contingents and Canadian imperialism. A story and a study. London: T. F. Unwin, 1901. xii, 352 pp. Illustrations. Plates. Portraits. Maps. 8°.

Farrelly, M. J. The settlement after the war in South Africa. New York & London: The Macmillan co., 1900. xv, 323 pp. 8°.

Fisher, Sydney George. The American revolution and the Boer war; an open letter to Mr. Charles Francis Adams on his pamphlet "The confederacy and the Transvaal." [Philadelphia: G. H. Buchanan and company], 1902. 33 pp. 8°. "Reprinted from the Philadelphia Sunday Times of January 19, 1902."

Fisher, W. E. Garrett. The Transvaal and the Boers; a short history of the South African Republic, with a chapter on the Orange Free State. London: Chapman & Hall, 1900. ix, (2), 394 pp. Map. 8°.

Frocard, [Paul Marie], and [Achille Paul Arsène] Painvin. La guerre au Transvaal. Paris: Cerf, 1900–1901. 2 vols. Illustrations. 12°.

Graydon, William Murray. With Boer and Britisher in the Transvaal. New York: Street & Smith, [1900]. 203 pp. 12°. (Medal library, no. 39.)

Green, James. Causes of the war in South Africa. Worcester, Mass., 1900. 26 pp. 8°. A paper read before the Worcester society of antiquity.

Grout, Lewis. The Boer and the Briton in South Africa; or, The present war in its historical and moral bearings; a paper read at a meeting of the Brattleboro professional club, November 14, 1899. 3d ed. Brattleboro, Vt.: The Phœnix job printing office, 1900. 24 pp. Portrait. 8°.

—— A critique on "Bishop Hartzell's great lecture" in Chicago, May 2, 1900, on "The Briton and the Boer." Brattleboro, Vt.: The Phœnix job printing office, 1900. 16 pp. Portrait. 8°.

Guyot, Yves. Boer politics. Translated from the French. London: J. Murray, 1900. xviii, 155 pp. 12°. Appeared originally in Le Siècle.

—— Inglesi e Boeri. Estratto dal Siècle, 3 febbraio, 1900. [London: Women's printing society, 1900.] 7 pp. 8°. Caption title.

Halsted, Murat. Briton and Boer in South Africa. [Philadelphia? 1900.] 542 pp. Plates. Portraits. Map. 8°.

Hammond, John Hays. The Transvaal trouble; an address. New York: The Abbey press, [1900]. 37 pp. 12°.

Hammond, Natalie (Harris). "Mrs. John Hays Hammond." A woman's part in a revolution. New York, London, etc.: Longmans, Green, and co., 1897. (6), 144 pp. 16°. Extracts from a diary (Dec. 30, 1895–June 12, 1896) dealing chiefly with the Jameson raid.

Hassell, John Arthur. The Boer concentration camps of Bermuda. New York: J. A. Hassell, [1902.] 16 pp. Plates. 8°.

Hiley, Alan R. I., and John A. Hassell. The mobile Boer; being the record of the observations of two burgher officers. New York: The Grafton press, [1902]. xvii, 277 pp. Plates. Portraits. Maps. Plans. 12°.

Hillegas, Howard C. The Boers in war; the story of the British-Boer war of 1899–1900, as seen from the Boer side, with a description of the men and methods of the republican armies. New York: D. Appleton & co., 1900. xii, 300 pp. Illustrations. Map. Frontispiece. 12°.

—— Oom Paul's people; a narrative of the British-Boer troubles in South Africa, with a history of the Boers, the country, and its institutions. New York: D. Appleton & co., 1899. xi, 308 pp. Plates. Map. 12°.

HOBSON, JOHN A. The war in South Africa; its causes and effects. New York: The Macmillan company, 1900. viii, 324 pp. 8°.

HOFMEYR, ADRIAN. The story of my captivity during the Transvaal war. 1899–1900. London: E. Arnold, 1900. xii, 302 pp. Frontispiece (portrait). Plate. 12°.

HOLMES, PRESCOTT. Paul Kruger; the life story of the president of the Transvaal. With thirty-two engravings. Philadelphia: H. Altemus [1900]. 154 pp. Plates. Portraits. Map. 12°.

HOOKER, LE ROY. The Africanders; a century of Dutch-English feud in South Africa. Chicago & New York: Rand, McNally & co., 1900. 279 pp. Plates. Portraits. Map. 12°.

HOWLAND, FREDERICK HOPPIN. The chase of De Wet and other later phases of the Boer war as seen by an American correspondent. Providence: Preston and Rounds co., 1901. (8), 203 pp. Portrait. Map. 8°.

HUTCHESON, ROBERT. The truth about the South African question. Washington, D. C., 1900. 31 pp. 16°. (British-American association, Columbus, O. Tract no. 1.)

IRELAND, ALLEYNE. The Anglo-Boer conflict; its history and causes. Boston: Small, Maynard & co., 1900. ix, 141 pp. 16°.
Bibliography, pp. 137–141.

JOUBERT, P. J. Een ernstige representatie en historische herinnering aan hare majesteit koningin Victoria. Pretoria: "Land en volk" drukkerij, [1899]. 19 pp. 12°. Cover-title.

——— An earnest representation and historical reminder to Her Majesty Queen Victoria. Pretoria: "Land en volk" office, 1899. 18 pp. 12°. Cover-title.

[KALER], JAMES OTIS. Fighting for the empire; the story of the war in South Africa. By James Otis, [*pseud.*] Boston: D. Estes & company, [1900]. xxi, 11–466 pp. Plates. Portraits. Double map. 8°.

KEARSEY, ALEXANDER HORACE CYRIL. War record of the York & Lancaster regiment, 1900–1902, from regimental and private sources. With a preface by Colonel Kirkpatrick . . . illustrated with photographs and sketches by H. R. Headlam and E. Cooke. London: G. Bell and sons, 1903. x, 277 pp. Illustrations. Plates. Portraits. Map. 8°.

KNOX, ERNEST BLAKE. Buller's campaign with the Natal field force of 1900. London: R. B. Johnson, 1902. xx, 336 pp. Plates. Maps (partly folded). 8°.

KRUGER, PAUL. The memoirs of Paul Kruger, four times president of the South African Republic, told by himself. London: T. F. Unwin, 1902. 2 vols. Frontispieces (portraits). 8°.

KUNOWSKI, ERNST VON, and FRETZDORFF. Der Krieg in Südafrika. Nach den besten vorhandenen Quellen . . . 3. Aufl. Leipzig: Zuckschwerdt & co., 1900–1901. 3 pts in 1 vol. Maps. Plans. 8°.
Paged continuously.

LETTERS FROM AN UITLANDER, 1899–1902, with introduction by Major Sir Bartle Frere. London: J. Murray, 1903. (6), 167, (1) pp. 8°.

LOWRY, EDWARD P. With the Guards' brigade from Bloemfontein to Koomati Poort and back. London: H. Marshall & son, 1902. xii, 277, (1) pp. Plates. Portraits. 8°.

MACKENZIE, WILLIAM DOUGLAS, and ALFRED STEAD. South Africa; its history, heroes, and wars . . . illustrated . . . under direction of G. Spiel. Chicago & Philadelphia: Monarch book co., [1899]. 663 pp. Illustrations. Plates. 8°.

MACKERN, HENRY F. Side-lights on the march; the experiences of an American journalist in South Africa. London: J. Murray, 1901. xv, 256 pp. Frontispiece. Plates. 8°.

MAHAN, ALFRED THAYER. The war in South Africa; a narrative of the Anglo-Boer war from the beginning of hostilities to the fall of Pretoria . . . with an introduction by Sir J. G. Bourinot. New York: P. F. Collier & son, 1900. xviii, 11–208 pp. Illustrations. Plates (partly colored). Portraits. Map. Obl. 4°.

MASON, WILLIAM ERNEST. The war in South African republics . . . Speech of Hon. Wm. E. Mason, of Illinois, in the Senate . . . December 11, 1899. Washington: [Government printing office], 1899. 31 pp. 8°.

MAYDON, JOHN G. French's cavalry campaign. 2d ed. London: C. A. Pearson, 1902. xxix, 31–197, (1) pp. Portrait. Plates. 12°.

MEAD, EDWIN DOAK. Old and new books on South Africa. [Boston? 1900.] 12 pp. 8°. "Reprinted from the New England magazine, May, 1900."

—— The two Englands and their lessons for America. Boston, 1900. 24 pp. 8°.

METHUEN, ALGERNON MARSHALL STEDMAN. Peace or war in South Africa. American ed. (Reprint) by Charles D. Pierce. New York, [1901.] iv, (2), 91, (2) pp. Maps. 8°.

MEYERS, ROBERT C. V. The story of South Africa written especially for young people. [Philadelphia: P. W. Ziegler & co., 1900.] 380 pp. Frontispiece. Plates. 8°.

MILLER, JAMES MARTIN. South Africa; scenes from the "Dark continent" and the British-Boer war. Chicago: Stereopticon & film exchange, 1900. 16 pp. 8°.

MILNE, JAMES. The epistles of Atkins. Being some of the lights, on human nature in the ordeal of war, which illumine the letters of the common soldier, written from South Africa to his people at home; and so an answer to the question, "How does it feel to be in battle?" [2d impression.] London: T. F. Unwin, 1902. vii, 226, (2) pp. Plates. 12°.

MUSGRAVE, GEORGE CLARKE. In South Africa with Buller; illustrated from sketches by R. Bull, Maud, R. C. Woodville, and other war artists. Boston: Little, Brown, & co., 1900. xviii, 364 pp. Frontispiece. Plates. Map. 8°.

NAVILLE, ÉDOUARD [HENRI]. The Transvaal question from a foreign point of view; tr. from the French [by M. Vetch]. Edinburgh and London: W. Blackwood & sons, 1900. 64 pp. 12°.

NEIL, C. LANG, *ed.* South Africa in peace and war. London: Miles & Miles, 1900. 191 pp. Plates. Portraits. Obl. 4°.

Neville, John Ormond. Boer and Britisher in South Africa; a history of the Boer-British war . . . together with biographies of the great men who made the history of South Africa. [Chicago]: The United subscription book publishers of America, 1900. xiii, 21–310, vi pp. Plates. Portraits. 8°.

Norris, Stephen Leslie. The South African war, 1899–1900; a military retrospect up to the relief of Ladysmith. London: J. Murray, 1900. xi, (1), 309 pp. Maps (partly folded). 8°.

[O'Connor, Thomas Patrick.] Who ought to win? Oom Paul or Queen Victoria? A history of the Dutch-English settlement in South Africa from its origin to the present day; with letters . . . describing the . . . bravery of the Boer and British armies. By Spencer Randolph [*pseud.*]. Chicago: Laird & Lee, [1900]. 287 pp. Plates. Map. 12°.

Omond, George William Thomson. The Boers in Europe; a sidelight on history. London: A. & C. Black, 1903. (6), 277 pp. 12°.

On the heels of De Wet, by the Intelligence officer. 5th impression. Edinburgh and London: W. Blackwood and sons, 1902. vi, (2), 346 pp. Map. 12°.

First published as a series of papers in Blackwood's magazine, 1902.

Oordt, J. F. van. Paul Kruger en de opkomst der Zuid-Afrikaansche republiek. Amsterdam & Kaapstad: Hollandsch Afrikaansche uitgevers-maatschappij v/h. J. Dusseau & co., [1898]. (12), 904 pp. Frontispiece (portrait). 4°.

Pearse, Henry H. S. Four months besieged; the story of Ladysmith. being unpublished letters from . . . the "Daily news" special correspondent. London, New York: Macmillan and co., 1900. xiv, 244 pp. Plates. Maps (partly folded). Frontispiece (portrait). 8°.

——— *ed.* The history of Lumsden's Horse; a complete record of the corps from its formation to its disbandment. London, New York, and Bombay: Longmans, Green, and co., 1903. xii, 506 pp. Illustrations. Plates. Portraits. Folded map. 4°.

Pettigrew, Richard F. The South African republic. Speech in the Senate, April 14, 1900. Washington: [Government printing office], 1900. 27 pp. 8°.

Phillips, [Florence]. Some South African recollections. London [etc.]: Longmans, Green, and co., 1899. x, 183 pp. Plates. 8°.

Phillips, Thomas. The South African question. A lecture on "The Transvaal and its system of government," with some of the abuses of power which have led to the present war in South Africa. Philadelphia: Philadelphia journal, 1900. (22) pp. 12°.

Pienaar, Philip. With Steyn and De Wet. London: Methuen & co., 1902. (6), 173, (1) pp. 12°.

Pierce, Charles Denio. The South African republics. This souvenir is published for and in behalf of the Boer relief fund. New York, 1900. 48 pp. Illustrations. 4°.

Poirier, Jules. Le Transvaal (1652–1899). Préface de . . . A. Chuquet. Paris: C. Delagrave, [1900]. xxiv, 329 pp. Map. 12°.

Powell, Baden Fletcher Smyth Baden-. War in practice; some tactical and other lessons of the campaign in South Africa, 1899–1902.

With an introduction by Major-General R. S. S. Baden-Powell. London: Isbister & company, 1903. 280 pp. Plates. Plan. Diagrams. 12°. "Appendix: a typical position. Exemplifying difficulties of attack and uncertainties of defence," pp. 267–268.

PRUSSIA. *Grosser Generalstab. Kriegsgeschichtliche Abteilung.* The war in South Africa, prepared in the Historical section of the Great general staff, Berlin. Authorised translation by Colonel W. H. H. Waters. London: J. Murray, 1904. ix, 280 pp. Plates. Folded maps. 8°.

RALPH, JULIAN. An American with Lord Roberts. New York: F. A. Stokes co., [1901]. (2), 4, 314 pp. 12°.

Continuation of the author's "Toward Pretoria."

——— Towards Pretoria; a record of the war between Briton and Boer to the relief of Kimberley. New York: F. A. Stokes co., [1900]. viii, (2), 328 pp. Map. 12°.

——— War's brighter side; the story of "The Friend" newspaper, ed. by the correspondents with Lord Roberts's forces, March-April, 1900. With contributions from A. C. Doyle, R. Kipling, and others, and a letter from Earl Roberts. New York: D. Appleton and co., 1901. xvii, 471 pp. Plates. Portraits. Facsimiles. 12°.

[RANKIN, JAMES REGINALD LEA.] A subaltern's letters to his wife . . . 2d ed. (8th impression). London, New York, and Bombay: Longmans, Green and co., 1902. (8), 228 pp. 12°.

RIDPATH, JOHN CLARK, and EDWARD SYLVESTER ELLIS. The story of South Africa; an account of the historical transformation of the dark continent by the European powers and the culminating contest between Great Britain and the South African Republic in the Transvaal war. New York & Chicago: New England co., [1899]. (2), 641 pp. Illustrations. Plates. Portraits. Map. 8°.

ROBERTSON, John M. Wrecking the empire. London: G. Richards, 1901. xlvi, 313 pp. 12°.

ROBINSON, CHARLES NAPIER, *ed.* A pictorial history of South Africa and the Transvaal. Ed. by Commander Chas. N. Robinson. [3d ed.] London: G. Newnes, [1900?]. 122 pp. Illustrations. Portraits. Maps. Frontispiece. 8°.

SCHREINER, OLIVE, "Mrs. Cronwright." The South African question. Chicago: C. H. Sergel co., 1899. 123 pp. 12°.

SEIDEL, AUGUST. Transvaal, die Südafrikanische Republik. Historisch, geographisch, politisch, wirtschaftlich dargestellt . . . 3. verb. und verm. Aufl. Berlin: Allgemeiner Verein für deutsche Litteratur, 1900. xv, 541 pp. Illustrations. Plates. Maps. 8°.

"Litteratur-Verzeichnis," pp. 462–487.

SHAFROTH, JOHN F. The Boer war and the duty of the United States relative to the same. Speeches of Hon. John F. Shafroth, of Colorado, in the House . . . February 1 and 7, 1900. Washington: [Government printing office], 1900. 16 pp. 8°.

SLEEPER, JOHN F. The tocsin. Reprinted from the 1st ed. of 1899. [Elizabeth, N. J.]: The Sherwood press, 1902. (6), xii, 42, (1) pp. 4°.

South African Republic. Boer version of the Transvaal war; or, An English translation of all Dutch official telegrams, received at Vryheid during Boer war up to the time when British troops occupied Vryheid [Sept. 19, 1900]. London: J. Barter, jnr., 1901. 95 pp. 8°.
In double columns.

Statham, F. Reginald. Paul Kruger and his times. London: T. F. Unwin; Boston: L. C. Page & co., 1898. vii, 312 pp. Portrait. Map. 8°.

[**Stead, William Thomas.**] How Britain goes to war; a digest and an analysis of evidence taken by the Royal commission on the war in South Africa, compiled from the Blue books for the information of the public, by the author of "The truth about the navy." London: "Review of reviews" office, 1903. 256 pp. Portraits. 8°.

—— The war in South Africa, 1899–19—? "Methods of barbarism." The case for intervention. London, [Henderson & Spalding], 1901. 96 pp. 8°.

Steevens, George Warrington. From Capetown to Ladysmith; an unfinished record of the South African war. Ed. by Vernon Blackburn. New York: Dodd, Mead & co., 1900. iii, 198 pp. Portrait. Map. 12°.

Stenographic Report of the Pro-Boer mass-meeting held at the People's church [St. Paul] January 6th, 1900. Thomas R. Kane's brilliant address: "History of the South African republics." From the Daily Volkszeitung, January 10, 1900. St. Paul, Minn. [St. Paul, 1900.] 61 pp. 24°.

Sternberg, Adelbert Wenceslaus Heinrich Leopold Maria, *Graf* **von.** My experiences of the Boer war, by Count Sternberg; tr. from the German, with an introduction by Lieut.-Colonel G. F. R. Henderson . . . 2d impression. London, New York, etc.: Longmans, Green, and co., 1901. xlii, (2), 268 pp. 8°.

Stickney, Albert. The Transvaal outlook. [n. p.], 1900. (4), 108 pp. Maps. Diagrams. 8°.

Stuart, John. Pictures of war. Westminster: A. Constable & co., 1901. (6), 413, (1) pp. Folded maps. 8°.

Sulzer, William. Government for the territory of Hawaii. The late Richard Parks Bland. Election of senators by the people. Sympathy for the Boers. Speeches of Hon. William Sulzer, of New York, in the House, April 4, 7, 12, and May 7, 1900. Washington: [Government printing office], 1900. 16 pp. 8°.

—— The South African republic. Speech in the House, March 27, 1900. Washington: [Government printing office], 1900. 8 pp. 8°.

Thomas, C. H. Origin of the Anglo-Boer war revealed; the conspiracy of the 19th century unmasked. London: Hodder and Stoughton, 1900. viii, 215 pp. 12°.

Thomson, Ada. Memorials of Charles Dixon Kimber, lieut. 48th co., Imperial yeomanry, by his sister, Ada Thomson. London: J. Nisbet & co., 1902. viii, 249, (1) pp. Plates. Portraits. Map. 8°.

The Times, London. Great Britain and the Dutch republics. Reprinted from the Times. London: G. E. Wright, 1900. (2), 60 pp. 24°.

THE TRANSVAAL; a condensed history of the South African republic. Chicago and New York: Rand, McNally & co., [1899]. 60 pp. Illustrations. Map. 12°.

TREADWELL, JAMES WILLWAY. American history of Transvaal Boers, gathered wholly from American authorities of public statistics and business men . . . also . . . Evils of government savings banks. San Francisco, 1899. 32, (17) pp. 8°.

UNGER, FREDERIC WILLIAM. With "Bobs" and Krüger; experiences and observations of an American war correspondent in the field with both armies, illustrated from photographs taken by the author. Philadelphia: H. T. Coates and co., 1901. 10, 412 pp. Illustrations. Frontispiece. 8°.

UNITED STATES. *Adjutant General's Office.* Reports on military operations in South Africa and China. July, 1901. Washington: Government printing office, 1901. 600 pp. Folded maps. 8°. (Military information series, no. 33.) "Extracts from the reports of Captain S. L'H. Slocum, on the operations of the British army," pp. 7–92; "Extracts from the report of Captain Carl Reichmann, on the operations of the Boer army," pp. 93–259; "Brief summary of military operations in South Africa," pp. 261–325.

—— 56th Congress, 1st session. Senate document no. 386. Papers relating to war in South Africa; presented by Mr. Teller. May 21, 1900. 36 pp. 8°.

VAINCRE OU MOURIR; LA GUERRE AU TRANSVAAL. Photographies prises sur le champ de bataille. [Paris: Librairie Nilsson, etc., 1901.] 32 pp. Illustrations. F°. Cover-title.

[VAN DER HOOGT, CORNELIUS W.] *ed.* A century of injustice; synopsis of a message to the people of South-Africa, sent by the government of the South-African Republic. An earnest representation and historical reminder to . . . Queen Victoria . . . in view of the prevailing crisis, by P. J. Joubert . . . A proclamation to the burghers of the Orange Free State, by M. J. Stein. . . . preceded by The struggle of our brethren in South-Africa to maintain their independence . . . by C. W. Van der Hoogt. Baltimore, 1899. 119 pp. Portraits. 8°.

—— The story of the Boers narrated by their own leaders, prepared under the authority of the South African republics . . . preceded by The policy of mediation, by M. White. New York & London: Harper & bros., 1900. vi, (4), 284, (2) pp. Plates. Portraits. Map. 12°. A new and revised edition of "A century of injustice."

VILJOEN, BENJAMIN JOHANNIS. My reminiscences of the Anglo-Boer war. Popular ed. St. Louis, Mo.: Becktold printing & book mfg. co., [1905]. 12, 17–312 pp. 8°.

VILLEBOIS DE MAREUIL, GEORGES HENRI ANNE MARIE VICTOR DE. War notes; the diary of Colonel de Villebois-Mareuil, from November 24, 1899, to March 7, 1900; authorised translation from the Paris Liberté, by Frederick Lees, with a preface by E. M. de Vogüé. London: A. and C. Black, 1901. xx, 282, (1) pp. 12°.

WAR AGAINST WAR IN SOUTH AFRICA. Ed. by W. T. Stead. nos. 1-30; Oct. 20, 1899-August 10, 1900. [London], 1899-1900. 1 vol. Illustrations. 4°. Weekly, Oct., 1899-Apr., 1900; monthly, June-Aug., 1900.

——— Supplement . . . Mar. 9, 1900. "Stop the war" conference in Exeter Hall. Full report of the proceedings . . . [London, 1900]. 4 pp. 42cm. fold. to 28cm. (*With* War against war in South Africa. [London], 1899-1900. 4°.)

——— Supplement . . . June 1, 1900. "Stop the war" meeting in the Memorial Hall, May 24, 1900. Full report of the proceedings. [London, 1900.] 4 pp. 44 cm. fold. to 28 cm. (*With* War against war in South Africa. [London, 1899-1900]. 4°.)

WELLINGTON, GEORGE L. The war in South Africa. Speech in the Senate . . . May 28, 1900. Washington: [Government printing office]. 1900. 20 pp. 8°.

WESTLAKE, JOHN. The Transvaal war; a lecture delivered in the University of Cambridge on 9th November, 1899. 2d ed. London: C. J. Clay & sons, 1899. (4), 35 pp. 8°.

WILKINSON, HENRY SPENSER. War and policy; essays. New York: Dodd, Mead & co., 1900. xv, 443 pp. Maps. 8°.

Contents.—1. Military history.—2. Art of war.—3. Problems of policy.—4. National defence.—5. South African war.

WILLCOCKS, *Sir* WILLIAM. Three months in South Africa. A lecture delivered at the Century club, Cairo, on the 28th January, 1902. Cairo: National printing department, 1902. 46 pp. 8°.

WILLIAMS, CHARLES. Hushed up: a case for inquiry into some suppressed facts concerning the conduct of the war in South Africa. [London]: G. Richards, 1902. 106 pp. 12°.

WILLIAMS, HUGH, and FREDERICK CHARLES HICKS, *ed.* Selected official documents of the South African Republic and Great Britain. A documentary perspective of the causes of the war in South Africa. Philadelphia: American academy of political and social science, 1900. 72 pp. 8°. (American academy of political and social science. Annals. Supplement. July, 1900.)

WILSON, HERBERT WRIGLEY. After Pretoria: the guerilla war. The supplement to "With the flag to Pretoria." With many illustrations, mainly from photographs taken at the seat of war. [London]: The Amalgamated press, 1902. 2 vols. Illustrations. Portraits. Maps. F°. "Forming vol. III [and IV] of the complete work."

——— With the flag to Pretoria. A history of the Boer war of 1899-1900. London: Harmsworth bros., 1900-1901. 2 vols. Illustrations. Portraits. Maps. F°.

WILSON, WILLIAM LAWLER. England and the Transvaal: the case for intervention. An Englishman's appeal and address to the English people. [4th ed.] London: The Grosvenor press, 1899. 52 pp. Map. 8°.

WISSER, JOHN PHILIP. The second Boer war. 1899-1900. Kansas City, Mo.: Hudson-Kimberly pub. co., 1901. 270 pp. Illustrations. Portfolio of maps. 8°.

YOUNGHUSBAND, FRANCIS EDWARD. South Africa of to-day. London, New York: Macmillan and co., 1898. vii, (1), 177, (1) pp. Plates. Portrait. 8°. Originally published as a series of letters in the London Times.

—— *Same.* London, New York: Macmillan and co., 1899. lx, (3), 258 pp. Plates. Portrait. 12°.

ZUM TRANSVAAL-KRIEG. Weltfriede(!) (eine Bitte an England). [n. p., 1900.] 16 pp. 8°.

BRITISH PARLIAMENTARY PAPERS.

GREAT BRITAIN. *Admiralty.* South Africa (Naval brigade). "Copies of despatches in regard to the naval brigade in South Africa, which were published in the 'London Gazette' of the 12th instant." Ordered, by the House of Commons, to be printed, 29 April, 1901. London [1901]. 58 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 42. 142.)

—— —— South Africa (Transports). Return showing the name, tonnage, and speed of each vessel employed to convey troops to South Africa since the 1st day of July last, the date and port of her departure from these shores, and arrival at Cape Town, Durban, or elsewhere [etc., etc.]. Ordered, by the House of Commons, to be printed, 22 May, 1900. London, 1900. 16 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 51. 184.)

—— —— South Africa (Transports). Return showing the name, tonnage, and speed of each vessel employed to convey troops to South Africa since the 1st day of April, 1900, and up to and ending 31st day of March, 1901. Ordered, by the House of Commons, to be printed, 17 August, 1901. London [1901]. 11 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 42. 374.)

—— —— *Same.* Since the 1st day of April, 1901, and up to and ending 31st day of March, 1902. London, 1902. F°. (Great Britain. Parliament. Sessional papers, 1902. 360.) [a]

—— —— Transports (South African war). Return "giving the names of all transports hired for the conveyance of troops, stores, and material to South Africa in 1899, 1900, 1901, and 1902. Ordered, by the House of Commons, to be printed, 13 August, 1903. London, 1903. 57 pp. F°. (Great Britain. Parliament. Sessional papers, 1903. 354.)

—— *Army.* *See* GREAT BRITAIN. *War department.*

—— *Colonial office.* South African Republic. Correspondence on the subject of the recent disturbances in the South African Republic. Presented to both Houses of Parliament by command of Her Majesty. February, 1896. London, 1896. xix, 93 pp. F°. (Great Britain. Parliament. Sessional papers, 1896, vol. 59. C. 7933.)

—— —— —— Correspondence relating to affairs in the South African Republic. Presented to both Houses of Parliament by command of Her Majesty. April, 1896. London, 1896. xiii, 174 pp. F°. (Great Britain. Parliament. Sessional papers, 1896, vol. 59. C. 8063.)

---

[a] Not in the Library of Congress at present.

GREAT BRITAIN. *Colonial office.* South African Republic. Papers relating to the commandeering of British subjects in the South African Republic in 1894, and the visit of the High commissioner to Pretoria. Presented to both Houses of Parliament by command of Her Majesty. July, 1896. London, 1896. v, 53 pp. F°. (Great Britain. Parliament. Sessional papers, 1896, vol. 59. C. 8159.)

——— ——— ——— Correspondence regarding the imprisonment at Pretoria of Mr. W. D. Davies and Captain Woolls Sampson. Presented to both Houses of Parliament by command of Her Majesty. February, 1897. London, 1897. v, 28 pp. F°. (Great Britain. Parliament. Sessional papers, 1897, vol. 62. C. 8346.)

——— ——— ——— Further correspondence relating to affairs in the South African Republic. Presented to Parliament by command of Her Majesty. April, 1897. London, 1897. xv, 141 pp. F°. (Great Britain. Parliament. Sessional papers, 1897, vol. 62. C. 8423.)

——— ——— ——— Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. February, 1898. London, 1898. 59 pp. F°. (Great Britain. Parliament. Sessional papers, 1898, vol. 60. C. 8721.)

——— ——— ——— Papers relating to the complaints of British subjects in the South African Republic. Presented to both Houses of Parliament by command of Her Majesty. June, 1899. London, 1899. xii, 243 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9345.)

——— ——— ——— Correspondence relating to the Bloemfontein conference, 1899. Presented to both Houses of Parliament by command of Her Majesty. July, 1899. London, 1899. (4), 66 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9404.)

——— ——— ——— Further correspondence relating to proposed political reforms in the South African Republic. Presented to both Houses of Parliament by command of Her Majesty. July, 1899. London, 1899. x, 74 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9415.)

——— ——— ——— Correspondence relating to the status of the South African Republic. Presented to both Houses of Parliament by command of Her Majesty. August, 1899. London, 1899. 34 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9507.)

——— ——— ——— *Same.* Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. August, 1899. London, 1899. vi, 76 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9518.)

——— ——— ——— *Same.* Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. September, 1899. London, 1899. viii, 65 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9521.)

——— ——— ——— *Same.* Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. October, 1899. London, 1899. viii, 70 pp. F°. (Great Britain. Parliament. Sessional papers, 1899, vol. 64. C. 9530.)

GREAT BRITAIN. *Colonial office.* South African Republic. *Same.* Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. January, 1900. London, 1900. xiii, 253 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 43.)

——— ——— ——— *Same.* Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. July, 1900. London, 1900. xi, 193 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 261.)

——— ——— South Africa. Correspondence relating to the despatch of colonial military contingents to South Africa. Presented to both Houses of Parliament by command of Her Majesty. November, 1899. London, 1899. x, 28 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 18.)

——— ——— Natal. Correspondence relating to the defense of Natal. Presented to both Houses of Parliament by command of Her Majesty. January, 1900. London, 1900. 26 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 44.)

——— ——— Cape Colony. Correspondence relating to affairs of the Cape Colony. Presented to both Houses of Parliament by command of Her Majesty. July, 1900. London, 1900. iv, 44 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 264.)

——— ——— South Africa. Correspondence relating to the recent political situation in South Africa. Presented to both Houses of Parliament by command of Her Majesty. August, 1900. London, 1900. (4), 19 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 369.)

——— ——— ——— *Same.* Further correspondence. Presented to both Houses of Parliament by command of Her Majesty. December, 1900. London, 1900. v, 122 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 420.)

——— ——— ——— Further correspondence relating to affairs in South Africa. Presented to both Houses of Parliament by command of His Majesty. April, 1901. London, 1901. 77 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 547.)

——— ——— ——— Correspondence relating to proposed additions of territory to Natal. Presented to both Houses of Parliament by command of His Majesty. May, 1902. London, 1902. 12 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 941.)

——— ——— ——— Further correspondence relating to affairs in South Africa. Presented to both Houses of Parliament by command of His Majesty. January, 1902. London, 1902. x, 202 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 903.)

——— ——— Cape Colony. Petition for the temporary suspension of the Cape constitution and reply of His Majesty's government. Presented to both Houses of Parliament by command of His Majesty. July, 1902. London, 1902. 9 pp. F°. (Great Britain. Parliament Sessional papers, 1902. Cd. 1162.)

GREAT BRITAIN. *Colonial office.* South Africa. Papers relating to an interview between the Secretary of state for the colonies and Generals Botha, De Wet, and De La Rey, on September 5th, 1902. Presented to both Houses of Parliament by command of His Majesty. September, 1902. London, 1902. 24 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 1284.)

——— ——— ——— Correspondence relating to the appeal of the Boer generals to the civilized world. Presented to both Houses of Parliament by command of His Majesty. November, 1902. London, 1902. 11 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 1329.)

——— *Concentration camps commission.* Report on the concentration camps in South Africa, by the Committee of ladies appointed by the Secretary of state for war; containing reports on the camps in Natal, the Orange river colony, and the Transvaal. Presented to Parliament by command of His Majesty. London, 1902. (2), 208 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 893.)

——— *Foreign office.* Africa. No. 1 (1902). Correspondence with the Netherland government regarding the war in South Africa. Presented to both Houses of Parliament by command of His Majesty. February, 1902. London, [1902]. (2), 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 906.)

——— ——— Africa. No. 2 (1900). Correspondence with the Presidents of the South African republic and of the Orange Free state respecting the war. Presented to both Houses of Parliament by command of Her Majesty. March, 1900. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 35.)

——— *High commissioner for South Africa.* South Africa. Notice issued, on 26th January, 1900, relating to forfeitures, &c., of property situated in the South African republic or in the Orange Free state, declared subsequently to 10th October, 1899. Presented to both Houses of Parliament by command of Her Majesty. February, 1900. London, 1900. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 53.)

——— ——— ——— Proclamation issued on 19th March, 1900, relating to alienations of property by the governments of the South African Republic or Orange Free State. Made subsequently to the date of the proclamation. Presented to both Houses of Parliament by command of Her Majesty. April, 1900. London, 1900. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 128.)

——— *Royal commission on martial-law sentences, South Africa.* South Africa, 1902. Report of the Royal commission appointed to inquire into sentences passed under martial law. Presented to both Houses of Parliament by command of His Majesty. November, 1902. London, 1902. v, 63 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 1364.)

——— *Royal commission on South African hospitals.* Report of the Royal commission appointed to consider and report upon the care and treatment of the sick and wounded during the South African campaign. Presented to both Houses of Parliament by command of Her Majesty. London, 1901. vi, 71 pp. F°. (Great Britain. Parliament. Sessional papers, 1901. Cd. 453.)

—— —— Minutes of evidence taken before the Royal commission appointed to consider and report upon the care and treatment of the sick and wounded during the South African campaign. Presented to both Houses of Parliament by command of Her Majesty. London, 1901. lii, (2), 565 pp. F°. (Great Britain. Parliament. Sessional papers, 1901. Cd. 454.)

—— —— —— Appendix to Minutes of evidence. Presented to both Houses of Parliament by command of Her Majesty. London, 1901. (2), 368 pp. F°. (Great Britain. Parliament. Sessional papers, 1901. Cd. 455.)

—— *Royal commission on the war in South Africa.* Report of His Majesty's commissioners appointed to inquire into the military preparations and other matters connected with the war in South Africa. Presented to both Houses of Parliament by command of His Majesty. London, 1903. viii, 316 pp. F°. (Great Britain. Parliament. Sessional papers, 1903. Cd. 1789.)

—— —— Minutes of evidence taken before the Royal commission on the war in South Africa. Presented to both Houses of Parliament by command of His Majesty. London, 1903. 2 vols. F°. (Great Britain. Parliament. Sessional papers, 1903. Cd. 1790–1791.)

—— —— —— Appendices to the Minutes of evidence taken before the Royal commission on the war in South Africa. Presented to both Houses of Parliament by command of His Majesty. London, 1903. (1), 445 pp. F°. (Great Britain. Parliament. Sessional papers, 1903. Cd. 1792.)

—— *Select committee on the Jameson raid.* South African Republic. Report of the Select committee of the Cape of Good Hope, House of Assembly, on the Jameson raid into the territory of the South African republic. Presented to Parliament by command of Her Majesty. March, 1897. London, 1897. iv, 300 pp. F°. (Great Britain. Parliament. Sessional papers, 1897, vol. 62. C. 8404.)

—— *Transvaal concession commission.* Report. Dated 19th April, 1901. Presented to both Houses of Parliament by command of His Majesty. June, 1901. London, 1901. 161 pp. Folded plan. F°.

—— —— —— *Same.* Part II. Minutes of evidence. Presented to both Houses of Parliament by command of His Majesty. June, 1901. London, 1901. iv, 268 pp. F°.

—— —— —— *Same.* Part III. Appendix of documents. Presented to both Houses of Parliament by command of His Majesty. June, 1901. London, 1901. 315 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 35. Cd. 623, 624, 625.)

—— *Treasury.* Wars in South Africa and China (cost and expenditures). Return "of estimated cost of wars in South Africa and China, showing how the expenditure is to be met." Ordered, by the House of Commons, to be printed, 2 May, 1901. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 37, 150.)

GREAT BRITAIN. *Treasury.* Wars in South Africa and China (cost and expenditure). Return "showing (1) the estimated amount of war charges in South Africa and China, which will be incurred up to 31st March, 1903; (2) how these charges have been or will be met; and (3) how the money borrowed has been raised." Ordered, by the House of Commons, to be printed, 24 April, 1902. London, 1902. 5 pp. F°. (Great Britain. Parliament. Sessional papers, 1902, 155.)

——— ——— ——— Return "showing (1) the estimated amount of war charges in South Africa and China incurred up to the 31st day of March, 1903; (2) how these charges have been met; and (3) how the money borrowed has been raised." Ordered, by the House of Commons, to be printed, 29 April, 1903. London, 1903. 5 pp. F°. (Great Britain. Parliament. Sessional papers, 1903, 130.)

——— *War department.* Imperial yeomanry. "Return showing the number of companies of Imperial yeomanry that have been formed, the names of the regiments and of the countries from which each company has been raised, the number that have embarked with horses, and the number that have left either wholly or partially without horses." Ordered, by the House of Commons, to be printed, 30 March, 1900. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49, 115.)

——— ——— South African war. Telegrams from Field-marshal Lord Roberts, reporting (1) a telegram addressed by him to the State presidents of the Orange Free State and South African Republic, in reference to the abuse of the white flag, and (2) the reply of the President of the Orange Free State. Presented to Parliament by Her Majesty's command, April, 1900. London, 1900. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 122.)

——— ——— Army (war in South Africa). Telegrams relating to the publication of despatches. Presented to Parliament by Her Majesty's command, May, 1900. London, 1900. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49. Cd. 155.)

——— ——— "Return showing the names of members of either House of Parliament at present serving, or under orders to serve, Her Majesty in South Africa, the capacity in which they serve, and the dates at which they sailed or are under orders to sail." Ordered, by the House of Commons, to be printed, 2 May, 1900. London [1900]. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49. 158.)

——— ——— Telegrams respecting hospital arrangements for the troops in South Africa. Presented to Parliament by command of Her Majesty. London, 1900. 4 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 230.)

——— ——— Medical and sanitary arrangements at the Cape. "Return of correspondence between the Honourable Member for Ilkeston and the War department in relation to medical and sanitary arrangements at the Cape." Ordered, by the House of Commons ,to be printed, 17 July, 1900. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49. 279.)

GREAT BRITAIN. *War department.* "Return of the number of officers and men who since the commencement of the present war have died or been invalided home from causes other than wounds received in action." Ordered, by the House of Commons, to be printed, 11 July, 1900. London, 1900. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49. 268.)

—— —— Statement of stores transferred from navy to land service for South Africa up to 31st December, 1899. Presented to Parliament by Her Majesty's command, July, 1900. London, 1900. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49. Cd. 279.)

—— —— Return of military forces in South Africa, 1899–1900. Presented to Parliament by Her Majesty's command. London, 1900. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 49. Cd. 421.)

—— —— *Same.* 1899–1901. Presented to Parliament by command of His Majesty. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 39. Cd. 462.)

—— —— Proclamations issued by Field-marshal Lord Roberts in South Africa. Presented to Parliament by Her Majesty's command. London, 1900. 23 pp. F°. (Great Britain. Parliament. Sessional papers, 1900, vol. 56. Cd. 426.)

—— —— South Africa despatches. Vol. 1, 2, Supplementary. Presented to Parliament by command of His Majesty. London, 1901. 3 vols. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 457, 458, 463.) Continued by: Despatch by General Lord Kitchener, dated 8th March, 1901. 16 pp. (Sessional papers, 1901, vol. 47. Cd. 522.)

—— —— *Same.* Dated 8th May, 1901. 36 pp. (Sessional papers, 1901, vol. 47. Cd. 605.)

—— —— *Same.* Dated 8th July, 1901. 42 pp. (Sessional papers, 1901, vol. 47. Cd. 695.)

—— —— *Same.* Dated 8th August, 8th September, and 8th October, 1901. 68 pp. (Sessional papers, 1902, vol. 69. Cd. 820.)

—— —— *Same.* Dated 8th November, 1901. 11 pp. (Sessional papers, 1902, vol. 69. Cd. 823.)

—— —— *Same.* Dated 8th December, 1901. 23 pp. (Sessional papers, 1902, vol. 69. Cd. 824.)

—— —— *Same.* Dated 8th January, 1902. 12 pp. (Sessional papers, 1902, vol. 69. Cd. 890.)

—— —— *Same.* Dated 8th February, 1902. 12 pp. (Sessional papers, 1902, vol. 69. Cd. 965.)

—— —— *Same.* Dated 8th March, 1902. 24 pp. (Sessional papers, 1902, vol. 69. Cd. 970.)

—— —— *Same.* Dated 8th April, 1902. 14 pp. (Sessional papers, 1902, vol. 69. Cd. 984.)

—— —— *Same.* Dated 1st June, 1902. 23 pp. (Sessional papers, 1902, vol. 69. Cd. 986.)

—— —— *Same.* Dated 23rd June, 1902. 41 pp. (Sessional papers, 1902, vol. 69. Cd. 988.)

GREAT BRITAIN. *War department.* Correspondence between Field-Marshal Lord Roberts, Commanding in Chief South Africa field force, and Acting commandant-general Louis Botha, dated 12th, 13th, 14th, and 15th June, 1900. Presented to Parliament by command of His Majesty. London, 1901. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 461.)

—— —— Correspondence relative to the recall of Major-General Sir H. E. Colvile, K. C. M. G., C. B. Presented to Parliament by command of His Majesty. London, 1901. 6 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 467.)

—— —— Return of military forces in South Africa. Oversea colonial contingents. Presented to Parliament by command of His Majesty. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 39. Cd. 469.)

—— —— Finding of a court of enquiry held at Barberton on 25th September, 1900, to investigate the circumstances under which Lieutenant-Colonel B. E. Spragge, D. S. O., XIIIth Bn. Imperial Yeomanry, and others, became prisoners of war. Presented to Parliament by command of His Majesty. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 470.)

—— —— Report by Lieut.-General Sir H. E. Colvile, on the operations of the ninth division at Paardeberg. Presented to Parliament by command of His Majesty. London, 1901. 10 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 520.)

—— —— South Africa. Return of buildings burnt in each month from June, 1900, to January, 1901, including farm buildings, mills, cottages, and hovels. Presented to Parliament by command of His Majesty. London, [1901]. 19 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 524.)

—— —— —— Papers relating to negotiations between Commandant Louis Botha and Lord Kitchener. Presented to both Houses of Parliament by command of His Majesty. March, 1901. London, 1901. 7 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 528.)

—— —— —— Further papers relating to negotiations between Commandant Louis Botha and Lord Kitchener. Presented to both Houses of Parliament by command of His Majesty. July, 1901. London, 1901. iv, 18 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 663.)

—— —— —— Letter from Commander Louis Botha to Lord Kitchener, dated 13th February, 1901. Presented to both Houses of Parliament by command of His Majesty. April, 1901. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 546.)

—— —— Return of military forces in South Africa, 1899–1901. Presented to Parliament by command of His Majesty. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 39. Cd. 578.)

GREAT BRITAIN. *War department.* Correspondence, etc., between the Commander-in-Chief in South Africa and the Boer commanders so far as it affects the destruction of property. Presented to both Houses of Parliament by command of His Majesty, June, 1901. London, 1901. 13 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 582.)

——— ——— South Africa. Return of numbers of persons in the concentration camps in South Africa, June, 1901. Presented to Parliament by command of His Majesty. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 608.)

——— ——— Strength of volunteer service companies and drafts embarked for South Africa in 1900. Presented to Parliament by command of His Majesty. London, 1901. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 40. Cd. 610.)

——— ——— South Africa. Report from Brigadier-general Dixon on the operations at Vlakfontein on 29th May, 1901. Presented to Parliament by command of His Majesty. London, 1901. 4 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 693.)

——— ——— ——— Further return of numbers of persons in the camps of refuge in South Africa, July, 1901. Presented to Parliament by command of His Majesty. London, 1901. (3) pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 694.)

——— ——— *Same.* Further return. August, 1901. London, 1902. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 789.)[a]

——— ——— South Africa. Correspondence relating to the prolongation of hostilities in South Africa. Presented to both Houses of Parliament by command of His Majesty. August, 1901. 7 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 732.)

——— ——— ——— Proclamation issued by Lord Kitchener, as administrator of the Transvaal, on 1st July, 1901, respecting payments under contracts to purchase or lease land or mining rights, &c., entered into prior to the war. Presented to both Houses of Parliament by command of His Majesty, August, 1901. London, 1901. 4 pp. F°. (Great Britain. Parliament. Sessional papers, 1901, vol. 47. Cd. 781.)

——— ——— ——— Return of numbers of persons in the concentration camps in South Africa, September, 1901. London, 1902. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 793.)[a]

——— ——— Reports, &c., on the working of the refugee camps in the Transvaal, Orange River Colony, Cape Colony, and Natal. Presented to both Houses of Parliament by command of His Majesty. November, 1901. London, 1901. 387 pp. Folded sheet. F°. (Great Britain. Parliament. Sessional papers, 1902, vol. 68. Cd. 819.)

——— ——— ——— Further papers relating to the working of the refugee camps. Presented to both Houses of Parliament by command of His Majesty, December, 1901. London, 1901. 131 pp. F°. (Great Britain. Parliament. Sessional papers, 1902, vol. 68. Cd. 853.)

---

[a] Not in the Library of Congress at present.

GREAT BRITAIN. *War department.* Reports, &c. *Same.* Further papers. Presented to both Houses of Parliament by command of His Majesty, January, 1902. London, 1902. 134 pp. F°. (Great Britain. Parliament. Sessional papers, 1902, vol. 68. Cd. 902.)

——— ——— *Same.* Further papers. Presented to both Houses of Parliament by command of His Majesty, February, 1902. London, 1902. 103 pp. F°. (Great Britain. Parliament. Sessional papers, 1902, vol. 68. Cd. 934.)

——— ——— *Same.* Further papers. Presented to both Houses of Parliament by command of His Majesty, March, 1902. London, 1902. 32 pp. F°. (Great Britain, Parliament. Sessional papers, 1902, vol. 68. Cd. 936.)

——— ——— Return of the numbers of troops and horses that have embarked for South Africa from 1st January, 1900, to 31st December, 1901. London, 1902. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 884.)[a]

——— ——— Returns of military forces in South Africa, 1899–1902. London, 1902. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 892.)[a]

——— ——— South Africa. Petition from Boer prisoners of war at Bermuda. Presented to both Houses of Parliament by command of His Majesty, January, 1902. London, 1902. (2), 2 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 921.)

——— ——— ——— Letter from Assistant-general Tobias Smuts to Commandant-general L. P. Botha. Presented to both Houses of Parliament by command of His Majesty, February, 1902. London, 1902. 4 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd 933.) "Letter found among papers recently captured, and sent home by the Field intelligence department, South Africa."

——— ——— ——— Statistics of the refugee camps in South Africa. Presented to both Houses of Parliament by command of His Majesty, April, 1902. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 939.)[a]

——— ——— ——— Statistics of the refugee camps in South Africa. Presented to both Houses of Parliament by command of His Majesty, May, 1902. London, 1902. 5 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 942.)

——— ——— I. Tender of M. Bergl & co., dated 6th January, 1902, for supply of meat to troops in South Africa. II. Letter of undertaking, dated 27th January, 1902, as to source of supply of meat. III. Letter of acceptance, signed by Director of army contracts, dated 27th January, 1902. Presented to Parliament by command of His Majesty. London, 1902. 7 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 961.)

——— ——— Army (remounts). Reports, statistical tables, and telegrams received from South Africa, June, 1899, to January 22, 1902. Presented to Parliament by command of His Majesty. London, 1902. 56 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 963.)

---

[a] Not in the Library of Congress at present.

GREAT BITAINR. *War department.* I. Tender of the Imperial cold-storage and supply company, limited, dated 4th March, 1902, for supply of meat to troops in South Africa. II. Letter of undertaking, dated 4th March, 1902, as to source of supply of meat. III. Letter of acceptance, signed by Director of army contracts, dated 12th March, 1902. London 1902. 7 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 964.)

—— —— Army (volunteer force). Comparative statement, showing the increase and decrease during the last quarters of 1900 and 1901. Presented to Parliament by command of His Majesty. London, 1902. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 966.)

—— —— South Africa. Report from Lieut.-General Lord Methuen on the action that took place near Tweebosch on 7th March, 1902. Presented to Parliament by command of His Majesty. London, 1902. 6 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 967.)

—— —— —— The Spion Kop despatches. Presented to Parliament by command of His Majesty. London, 1902. 48 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 968.)

—— —— —— Return of farm buildings, &c., in Cape Colony and Natal, destroyed by the Boers. Presented to Parliament by command of His Majesty. London, 1902. 6 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 979.)

—— —— Papers relating to the administration of martial law in South Africa. Presented to Parliament by command of His Majesty. London, 1902. 297 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 981.)

—— —— *Same.* (In continuation of Cd. 981.) London, 1903. 156 pp. F°. (Great Britain. Parliament. Sessional papers, 1903. Cd. 1423.)

—— —— South Africa. Telegrams concerning the siege of Ladysmith. Presented to Parliament by command of His Majesty. London, 1902. 4 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 987.)

—— —— Return of military forces in South Africa, 1899–1902. Presented to Parliament by command of His Majesty. London, 1902. (4) pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 990.)

—— —— Army expenditures, 1902–3. (South African war.) Statement showing approximately the revised amounts. Presented to Parliament by command of His Majesty. London, 1902. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 996.)

—— —— South Africa. Correspondence respecting terms of surrender of the Boer forces in the field. Presented to both Houses of Parliament by command of His Majesty. June, 1902. London, 1902. (2), 13 pp. F°. (Great Britain. Parliament. Sessional papers, 1902. Cd. 1096.)

—— —— Letter from General officer commanding the forces in South Africa transmitting the proceedings of a Board of officers assembled to report upon certain supplies of "meat and vegetable" rations at Pretoria considered to be unfit for issue. Presented to Parliament by command of His Majesty. London, 1903. 7 pp. F°. (Great Britain. Parliament. Sessional papers, 1903. Cd. 1499.)

Great Britain. *War department.* "Return of Military expeditions in which British or native troops have been employed during the last ten years." Ordered, by the House of Commons, to be printed, 7 April, 1903. London, 1903. 3 pp. F°. (Great Britain. Parliament. Sessional papers, 1903. 108.)

Red cross. Great Britain. Central British Red cross committee. Report by the Central British Red cross committee on voluntary organizations in aid of the sick and wounded during the South African war. London: Harrison and sons, 1902. vi, 209 pp. Plates. Folded plans. F°.

DUTCH DOCUMENTS.

Great Britain and South African Republic. Correspondentie van de Zuid-Afrikaansche Republiek met betrekkende tot het staatsmonopolie voor vervaardiging, enz. van kruit, ammunitie, dynamiet en alle andere ontplofbare stoffen. Pretoria: Staatsdrukkerij, 1899. (2), 18 pp. F°. [No. 7, 1899.] Part of the text also in English.

——— ——— Correspondentie van de Zuid-Afrikaansche Republiek met betrekking tot eenige wetten en tractaten in verband met de Conventie van Londen van 1884. [Pretoria]: Staatsdrukkerij, 1898. (4), 66, (8) pp. F°. [No. 2, 1898.] Part of the text also in English.

——— ——— Correspondentie van de Zuid-Afrikaansche Republiek met betrekking tot de crimineele jurisdicte van het hooggerechtshof van Swazieland naar aanleiding van den dood van den Induna M'Baba en anderen in verband met de Conventie van Volksrust van 1894. Pretoria: Staatsdrukkerij, 1899. (2), ii, 59 pp. F°. [No. 2, 1899.] The most of the text also in English in parallel columns.

——— ——— Correspondentie van de Zuid-Afrikaansche Republiek met betrekking tot de aanstelling van een consul-general der Zuid-Afrikaansche Republiek te Kaapstad. Pretoria: Staatsdrukkerij, 1899. 13 pp. F°. [No. 3, 1899.] Part of the text also in English.

——— ——— Verdere correspondentie van de Zuid-Afrikaansche Republiek met betrekking tot eenige wetten en traktaten in verband met de Conventie van Londen van 1884. Pretoria: Staatsdrukkerij, 1899. 10 pp. F°. [No. 5, 1899, Vervolg op no. 2, 1898.] Part of the text also in English.

——— ——— Officieele bescheiden gewisseld met de Engelsche regeering in zake de Conventie van Londen gesloten den 27sten Februari 1884 . . . Amsterdam: J. H. Kruyt, 1884. viii, 100 pp. Fold. map. F°. Text also in English.

——— ——— Officieele bescheiden betreffende de conventie gesloten te Pretoria dd. 2 Augustus 1890. Geratificeerd bij volksraadsbesluit art 1204, dd. 7 Augustus 1890. [Pretoria:] Staatsdrukkerij, 1890. viii, 63 pp. F°. [No. 1, 1890.]

——— ——— Notulen der verrichtingen van de conferentie op 31 Mei 1899 en volgende dagen to Bloemfontein . . . gehouden tusschen . . . den Staatspresident van de Zuid-Afrikaansche Republiek en . . . den Hoogen commissaris. Pretoria: Staatsdrukkerij, 1899. 54 pp. F°. [No. 4, 1899.]

ADDITIONAL TITLES.

HARDING, WILLIAM. War in South Africa and the Dark Continent from savagery to civilization. The strange story of a weird world from the earliest ages to the present, including the war with the Boers. [Chicago? 1902.] (4), 11-554 pp. Plates. Portraits. 8°.

METHUEN, ALGERNON MARSHALL STEDMAN. Peace or war in South Africa. 8th ed., rev. and enlarged. <18th thousand.> London: Methuen & co., 1901. xiv, 280 pp. Maps. 12°.

STARK, JAMES H. The British and Dutch in South Africa. Boston: James H. Stark, 1900. 32 pp. 12°. Cover-title.

INDEX.

A.

Abdominal bandage, 61.
Advance posts at Talana Hill, 81.
Algerian campaigns, tactics of, 78, 79.
Allen, Lieut. Chas. M., translation, 73.
Ambulances, color of, 55.
American generals, opinion of maneuvers, 10.
Ammunition pouches, 62, 65.
Armament, Lindenau's opinion on, 11.
Armament of infantry and cavalry, 66, 67, 92, 140.
Arms of officers, 65, 57, 104.
Articles of cavalry equipment, 65, 66.
Artillery:
  Artillery duel, 35, 36, 37, 45.
  Breakfontein, 33.
  Colenso, 36, 37, 44, 48, 143, 146, 199.
  Description of combat of, 29, 44, 98.
  Effect on advance of skirmish line, 18, 41.
  Effect on troops behind cover, 34, 98.
  Employment by the Boers, 30, 37, 41, 197.
  Employment by the English, 30, 37, 39, 41, 42, 43, 87, 102, 122, 148, 197.
  Glencoe, Elandslaagte, Rietfontein, 26, 142.
  In South African war, 21, 41, 47, 197.
  Magersfontein, 27, 43, 48, 158, 199.
  Matériel in South Africa, 23, 24, 140.
  Mobility of, 35.
  Mooi River, 31, 32.
  Observations of Captain Wilson on, 31.
  On the Tugela, 28, 124.
  Reserve, 35.
  Screens, 49.
  Shields, 25, 37, 38, 140, 198.
  Spion Kop, 28, 31, 151, 153.
  Vaal Krantz, 31, 34, 36, 37, 43, 122.
  With Cronje on the Modder, 27.
Atmospheric transparency, 32, 125.
Attack:
  Bayonet, 122, 137.
  Boer; description of Captain Gilbert, 29.

Attack—Continued.
    Boer; description of a German officer, 30, 41.
    Boguslawski's opinion of the, 15, 127, 172, 196.
    Bonnal's opinion of, 74, 75, 76, 82, 88, 89, 110.
    By groups, 12, 87, 116, 127, 173, 189, 202.
    Cavalry, 99, 100, 101, 102, 142, 199.
    During war of 1870, 17, 18, 79, 86, 98, 128, 152.
    English, 6, 82, 83, 122, 141, 142, 165, 168.
    Frontal, 7, 9, 10, 41, 88, 89, 95, 111, 121, 163, 202.
    German, 172, 188.
    Gilbert's opinion of, 29, 42, 43, 44, 49, 112.
    Hohenlohe's opinion of the, 18, 112.
    Lindenau's form of, 11, 114.
    Modern method of, 13, 16, 19, 40, 41, 49, 172, 188, 202.
    Night, 122, 132, 134, 150, 161.
    Observations of Captain Gilbert, 42, 43, 44, 47, 49, 50.
    Opinion of General Langlois on, 43, 45, 46, 47, 48.
    Scherff's opinion of the, 12, 114.
    Screens of, 49.
    Shrapnel, 32, 37, 38, 40, 41, 45, 47.
    Shields, 25, 37, 30, 38, 140, 198.
    Stieler's opinion of the, 12, 115.
    Waldersee method, 166, 189.
Assault, 184, 202.
Austrian tactical regulations, 169.

B.

Balck:
    Opinion of English extensions of front, 14.
    Opinion of fire losses, 8.
    Opinion of the offensive, 6.
Bandage, abdominal, 61.
Bandolier, cartridge, 104.
Barton, surprise of General, 32.
Batteries in position of observation, 45, 49.
Battle tactics, 188.
Bayonet attack, 122, 137.
Belt, ammunition, 62, 65, 104.
Berchem, Maj. P. Van, on artillery, 21.
Blouse, description of English, 58.
Boer artillery matériel, 25, 140.
Boer election of officers, 29, 30, 139.
Boer tactics:
    Bonnal's description of, 79.
    Denunciation of, 18.
    Description by a German officer, 30, 37.
    Gentz' analysis of, 120.
    Gilbert's description of, 29, 42.
    Stieler's opinion of, 12, 115.

Boguslawski:
    Opinion of the attack, 6.
    Opinion of fire effect, 7, 147, 183, 186.
    Tactical deductions, 127, 163, 202.
    Works on South African war, 15.
Bonnal:
    Eulogy of Captain Gilbert, 50.
    Lessons of the South African war, 70.
Boots of English, 59, 60, 63.
Boshrand, artillery at the battle of, 38.
Breakfontein, artillery at, 33.

C.

Caemmerer:
    On changes in the regulations, 12.
    Opinion of fire effect, 8.
Cap, vizorless, 61.
Canteen, 62, 64, 65.
Carbines carried by officers, 56, 104.
Cartridge pouches and belts, 62, 65, 104.
Cavalry:
    At Elaandslaagte, 142.
    At Koedoesrand Drift, 55.
    Buller's opinion of, 80.
    Duties of, 99, 100, 101, 102.
    Effect of artillery fire on, 48.
    Equipment, 64, 65, 66, 67.
    In the Boer war, 82, 142, 199.
    Visibility of, 55, 92, 105, 110.
Chassepot, range of, 6.
Clark's recoil device for artillery, 23.
Cloak of waterproof cloth, 61, 65.
Clothing, experiences as to, 51.
Colenso:
    Artillery at, 36, 44.
    Battle of, 143.
    Lindenau's analysis of, 7.
    Losses at, 8, 147.
Colors of uniform cloth, 54, 104, 105.
Commanding general's position, 153.
Conclusions:
    As to Boer successes, 120.
    Of anonymous writer, 97.
    Of General Boguslawski, 163, 202.
    Of General Bonnal, 110.
    Of German officer, 41.
    Of Captain Gilbert, 42, 43, 44, 49, 112.
Cooking utensils, 62, 65.
Cooperation of the three arms, 43, 46, 48, 99, 128.

Cover, utilization of, 33, 34, 40, 44, 92, 104, 105, 176.
Cronje, capitulation of, 84.

D.

Dangerous space of artillery, 38.
Decisive range, 6, 10, 44.
Deductions from the Boer war, 110, 163, 202.
Deep formations, necessity for, 49, 50, 123.
De Loffre, Lieut. S. M., translation, 119.
Deployments, 11, 13, 30, 76, 123, 202.
Description:
    Of Boer artillery, 25.
    Of English artillery, 23.
    Of war uniform, 51, 58.
Distinguishing marks of officers, 56.
Döberitz, maneuvers at, 10, 11, 18, 92, 115, 116, 171.
Donkeshock, artillery at, 39.
Drill, its importance, 193.
Duel of artillery, 35, 36, 37, 45.
Dundee, battle of, 141.
Duties of cavalry in war, 82, 99, 100, 101, 102, 142, 199.

E.

Economy of forces in artillery fire, 45, 49.
Effective range, 6, 10, 45, 85, 93, 183, 194.
Effective strength:
    Of Boer army, 26.
    Of British army, 25.
Elandslaagte, 82, 142, 199.
Election of officers by the Boers, 29, 30, 139.
Employment:
    Of Boer artillery, 30.
    Of English artillery, 30, 37, 39.
Engineer troops in the Boer war, 201.
English artillery matériel, 25, 37.
English failures, 6, 157, 163, 197.
English generals, opinion of maneuvers, 10.
English tactical regulations (new), 167.
Entrenching tool, 64, 134.
Enveloping movements of the Boers, 30.
Equipment, experiences as to, 51, 56, 62, 63, 64, 65.
Experiences as to clothing and equipment, 51, 56, 62, 63, 64, 65
Extension of fronts:
    By English, 14, 162, 168, 188.
    By German army, 50, 132, 188, 191, 203
Extra clothing of soldier, 63, 65.

F.

Failures of English, 6, 157, 163, 197.
Field batteries:
    Capture at Colenso, 44.
    (See Artillery.)
    English, 23, 24.
Field glasses, 65.
Fire:
    In motion, 16, 186.
    Superiority of, 11, 20, 31, 124.
    Visibility of, 33, 36, 104.
Fire, deductions from extra-European wars, 10.
Fire discipline, 194.
Fire effect:
    In recent years, 7, 8, 85, 98, 106, 110, 121, 124, 147, 183, 186.
    Under Frederick the Great, 77.
Firing line, position of, 20.
Flank attacks, 95, 96, 164.
Flashes, visibility of, 33.
Foot wear, 59, 60, 63.
Fortified positions, value of, 42, 201.
French tactical regulations, 170.
French's opinion on loss of horses, 64, 65.
Fronts, extension of, 14, 132, 162, 168, 188, 191, 203.
Front of units, 11, 14, 111, 168, 189.
Frontal attacks, 7, 9, 10, 41, 88, 89, 95, 98, 111, 121, 163, 202.

G.

Gentz, Lieutenant, tactical study, 119.
General Staff History, 4, 81, 82.
German army, bravery of, 9.
German attack, 172.
German General Staff:
    Monograph on fire deductions, 10.
    Opinion of, 5, 81.
German infantry, tactics of, 10, 119, 138, 170.
German officer, observations of, 37, 40, 41.
German tactical ideas, 5, 119, 121, 138.
Gilbert's:
    Conclusions, 112.
    Description of Boer tactics, 29.
    Observations on tactics, 42, 44, 47, 49, 50.
Glitter of uniforms, 55.
Group attack, 12, 87, 116.

H.

Haeftenn, essay on clothing and equipment, 51.
Hats of colonials and volunteers, 61, 104.

Haversack, 62, 63.
Head gear, 52, 60, 61, 104.
Helmets, English, 52, 60.
Herald (New York), article in, 10.
Highlanders, uniform of, 55.
Hilyard's criticism of cloak, 61.
Hohenlohe, opinion of the attack, 18, 112.
Horse batteries, English, 23, 24, 87.
Horses:
    Losses of, 64, 65.
    Visibility of, 54.
Horseshoes, 66.
Howitzers:
    Boer, 25.
    English, 23, 24, 25.
Hurt's opinion of the group attack, 12.

I.

Imperial maneuvers, 10, 12, 17, 18.
Importance of drill, 193.
Indian file, 105, 116.
Infantry attack, 11, 12, 13, 15, 16, 17, 18, 29, 30, 40, 46, 119, 138, 170.
Intendance service, 63, 201.
Intrenching tool, 64, 134.
Inviolable front, 7, 111.

K.

Khaki uniform, description of, 53, 58, 61, 104.
Kimberley campaign, 154, 199, 201.
Knapsack, 62, 63, 104.
Knudsen, Capt. F. L., translation, 127.
Koedoesrand Drift, cavalry at, 55.
Kreps, Capt. J. F., translation, 51.

L.

Lack of pursuit by English, 88, 157.
Lack of reconnoisance by English, 30, 43, 148, 155, 158.
Lack of unity of action by Boers, 30.
Langlois:
    Opinion of artillery fire, 43, 45, 46, 47.
    Opinion of smokeless powder, 48, 49.
Lance, 66, 67.
Lariat, 65.
Lassiter, Capt. William, translation, 21.
Leggings of English, 60.
Lessons of South African war (Bonnal), 73.

Lindenau:
    Analysis of battles, 7.
    Calculation of time of infantry advance, 18.
    Lecture on tactics, 11, 114, 171.
    Praise of, 13.
Lines of masses, 14, 75, 97, 123, 191.
Lines of skirmishers, 15, 76, 95, 105, 113, 123.
Long Tom, mention of, 26, 27, 28, 31.
Long's artillery at Colenso, 44, 146.
Losses:
    At Colenso, 147.
    At Elandslaagte, 142.
    At Magersfontein, 8, 160.
    Cause of English, 82.
    In battle, 8, 20, 151.
    Of horses, 64, 65.
Lyddite shells:
    Description of, 24.
    Effect of, 40, 48.

M.

Magersfontein:
    Battle of, 158.
    Boer use of cover at, 33.
    Lindenau's analysis of, 7.
    Losses at, 8, 160.
Machine guns, description of, 24, 25, 26, 37, 38.
Manner of carrying rifle, mounted, 67.
Maneuvers:
    At Döberitz, 10, 11, 18, 92, 115, 116, 171.
    On Salisbury Plain, 80.
    At Templehof, 10, 18, 91.
Marches:
    As affected by equipment, 62, 63.
    Tests of foot wear on, 59, 60, 63.
Masses, necessity for, 14, 75, 97, 123, 191.
Material for uniforms, 57, 58, 61.
Matériel of artillery in South Africa, 23, 32, 33.
Maxim-Nordenfelt guns, 26, 37, 38.
Melinite shells, effect of, 48.
Metal on uniforms, 55.
Militär Wochenblatt, anonymous article in, 13.
Militia partisans, 119.
Mixture of units, 20.
Mobility of the artillery, 35.
Modder River (Riet), 155.
Mooi River, artillery at the, 31.
Moral element of soldiers, 191.

Mountain guns:
    Boer, 25.
    English, 23.
Mounted infantry, 66, 79.

N.

Napoleon:
    Tactics of, 76, 77, 78, 117.
    Use of artillery at Friedland, 36.
Narrow formations, 105.
Navy guns:
    Capture at Colenso, 44.
    Description of, 24.
Neckel, opinion of, 6.
Nervous exhaustion under fire, 88.
New York Herald, article in, 10.
Night attacks, 122, 132, 134, 150, 161.
Notes on artillery in South African war, 21.

O.

Observation, batteries in position of, 45, 49.
Observations:
    Of an eyewitness, 85, 97.
    Of a German officer, 37.
    Of Captain Gilbert, 42, 43, 44, 47, 49.
    Of Capt. Holmes Wilson, 31.
Offensive and defensive, 6, 11, 120, 133, 136.
Officers' side arms, glitter of, 56.
Oral commands in battle, 15.
Orders for mounted troops, 65.
Overcoat of woolen cloth, 61.

P.

Paardeburg, 83, 85.
Pack mules, 64.
Pattern of uniform, 58.
Patterson rifle carrier, 67.
Personnel:
    Of Boer army, 139, 162.
    Of English army, 138, 163.
Pioneers in the Boer war, 201.
Plevna, lack of unity of action at, 44.
Pompoms:
    Description of, 24, 26.
    Use of, in battle, 37, 38.
Position of the commanding general, 15.
Pouches, ammunition, 62, 65.

Powder, smokeless, 34, 48, 78, 153, 157.
Putties, English, 60.

R.

Range, effective, 6, 10, 45, 85, 93, 183, 194.
Rapid-fire arms, effect on tactics, 11, 78.
Reconnoissance:
    By artillery fire, 42.
    By English cavalry, 199.
    Lack of, by the English, 30, 43, 148, 155, 158.
    Under modern conditions, 101.
Reenforcing the firing line, 179.
Reserve artillery, use of, 35.
Reserves:
    Position of English, 91.
    Use of, 191, 203.
Résumé of General Boguslawski, 202.
Riding trousers, 58, 59.
Riet, action at, 155.
Rifle carrier (Patterson), 67.
Rimington, suggestions on equipment, 65.
Rôle of cavalry, 200.
Rouquerol, opinion of use of artillery, 50.
Rushes, 11, 16, 18, 19, 87, 116, 167, 169, 177, 202.

S.

Saber, 66, 67.
Saddle, 65.
Scherff:
    Opinion as to the attack, 12, 114.
    Opinion on field regulations, 10.
Scots Grays, horses of, 54.
Screens of artillery, 49.
Shirt, blue-flannel, 61.
Sherrill, First Lieut. Clarence O., 5.
Shields of Boer artillery, 25, 37, 38, 39, 140, 198.
Shoes of English, 59, 60, 63.
Shrapnel, effect of, 32, 37, 38, 40, 41, 45, 47.
Side arms, glitter of, 56.
Siege guns:
    Boer, 25.
    English, 24.
Signals, use of, in battle, 15.
Skirmishers:
    Advance of, 18, 116, 174.
    Lines of, 15, 76, 95, 105, 113, 123.
Smokeless powder, effect of, 34, 48, 78, 153, 157.

Spade, intrenching, 64.
Spion Kop:
    Artillery at, 28, 31, 36.
    Battle of, 148.
    Lindenau's analysis of, 7.
    Night attack, 123.
Spurs, 59.
Stieler's opinion of attack, 12, 115.
Stockings, 60.
Strength of:
    Artillery in battles, 26.
    Boer army, 26.
    English army, 25.
    English guns, 24.
Sunstrokes due to removal of helmets, 61.
Superiority of fire, 11, 20, 31, 124.
Supports:
    Advance of, 18, 129, 179.
    Deployment of, 16, 17, 19, 175.
    Fire of, 11.
    Hurt's opinion of use of, 12.

T.

Tactics:
    Of the Boers, 12, 18, 29, 30, 37, 41, 79, 120, 136, 154.
    Of the English, 6, 82, 83, 122, 123, 137.
    Of Napoleon, 36, 76, 77, 78, 117.
Talana Hill, action at, 80, 81.
Teachings of the South African war, 21.
Templehof, maneuvers at, 10, 18, 91.
Thebachen, artillery at, 38.
Tiers of fire, 201.
Train:
    English, 63, 201.
    To follow cavalry, 65.
Transparency of atmosphere in South Africa, 32.
Trousers, description of English, 58, 59.

U.

Underclothing, 61.
Uniform:
    At English maneuvers, 70.
    Description of English, 51, 58, 61.
    Material for, 57, 104, 105.
Unity of action:
    Lack of, by Boers, 30.
    Need of, 43, 46, 48, 99, 128.
Utilization of cover, 33, 34, 40, 92, 104, 105, 176.

V.

Vaal Krantz, artillery at, 31, 34, 36, 37, 43, 122.
Visibility of:
  Cavalry and infantry, 55, 92, 105, 110.
  Equipments, 56.
  Gun fire, 33, 36, 104.
  Helmets, 60.
  Uniform clothing, 51, 54.

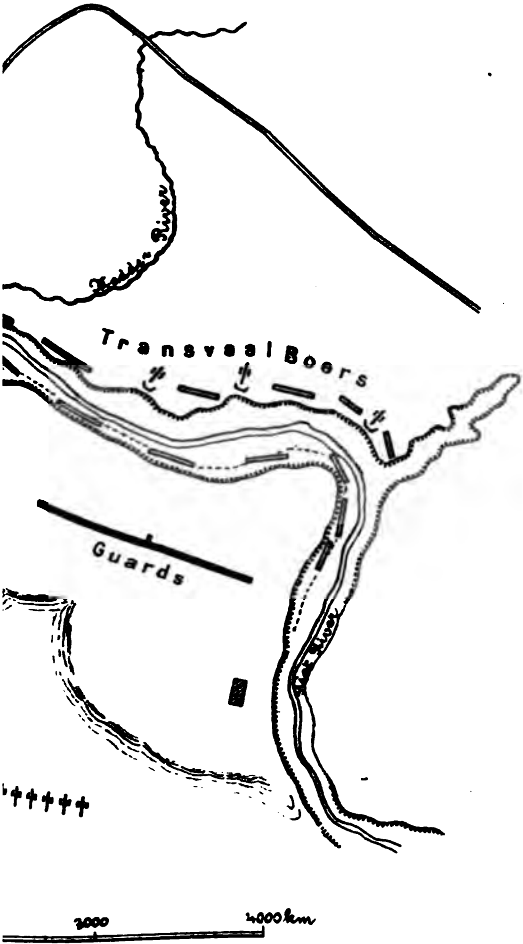
W.

Waldersee method of attack, 166, 189.
War of 1870:
  French tactics, 79.
  Front of units, 190.
  Losses of, 152.
  Opinion of Prince Hohenlohe on the, 18.
  Opinions of tacticians after the, 17, 128.
  Range of small arms, 6, 86.
  Repulse of frontal attacks, 98.
War uniform, description of, 51, 58.
Waterproof cloak, 61.
Weight:
  Of cavalry equipment, 64, 65.
  Of infantry soldiers' equipment, 62, 64.
  Relieving soldier of, 104.
Wilson, Capt. Holmes, 31.
Wire cutters, 65.
Woolen overcoat, 61.

O

Plate 3.

River Village on Riet River
1899.



THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON D. C.

W 26.3^2:5

WAR DEPARTMENT . . . OFFICE OF THE CHIEF OF STAFF.
SECOND (MILITARY INFORMATION) DIVISION.
GENERAL STAFF.
No. 5.

BULLETIN

OF

MILITARY NOTES.

No. III.

June 30, 1905.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1905.

War Department.
Document No. 252.
Office of the Chief of Staff.

ARGENTINA.

ARMY EFFECTIVE FOR THE CURRENT FINANCIAL YEAR.

The following are the latest official figures:

1. CORPS OF OFFICERS.

Four lieutenant-generals, 6 divisional and 12 brigadier generals, 84 colonels, 185 lieutenant-colonels, 190 majors, 245 captains, 260 first lieutenants, 280 lieutenants, and 300 sub-lieutenants; altogether, 1,566 officers.

2. TROOPS.

(*a*) *Infantry.*—Two rifle battalions of 4 companies each, with 28 officers, 82 noncommissioned officers, 32 volunteers, 20 fife and drums, 200 two years' men, 120 six months' service, 2 gunsmiths, and 2 shoemakers; total, 486.

Two battalions of mounted infantry of 4 companies each, with 28 officers, 82 noncommissioned officers, 32 volunteers, 12 musicians, 200 men of two years' and 120 with six months' service, with two mechanics, 2 saddlers, 2 shoemakers; total, 480.

Fourteen line battalions, with 194 officers, 574 noncommissioned officers, 224 volunteers, 140 musicians, 1,400 men with two years' and 840 with six months' service, 14 gunsmiths, 14 shoemakers; total, 3,400.

(*b*). *Cavalry.*—Two regiments of mounted gendarmes, each with 4 squadrons, with 36 officers, 90 noncommissioned officers, 520 volunteers, 20 trumpeters, 2 mechanics, 2 saddlers, 2 farriers, and 2 shoemakers; total, 674.

Eleven line regiments of 4 squadrons each, with 154 officers, 407 noncommissioned officers, 176 volunteers, 110 trumpeters, 880 men with two years' and 670 with six months' service, 11 mechanics, 11 saddlers, 11 farriers, and 11 shoemakers; total, 2,441.

(*c*) *Artillery.*—Five field artillery regiments of 4 batteries each, with 70 officers, 205 noncommissioned officers, 100 volunteers, 50 trumpeters, 700 gunners with two years' and 400 with six months' service. In addition, there are 5 mechanics, 10 saddlers, 10 farriers, 5 carpenters, and 5 shoemakers; total, 1,560.

Three mountain artillery regiments of 3 batteries each, with 33 officers, 93 noncommissioned officers, 45 volunteers, 30 trumpeters, 315 men with two years' and 180 with six months' service. In addition there are 3 mechanics, 6 locksmiths, 6 farriers, 3 carpenters, and 3 shoemakers; total, 717.

(*d*) *Engineers.*—Four battalions of 2 companies each, with 2 officers, 68 noncommissioned officers, 16 fife and drums, 40 volunteers, 280 men with two years' and 120 with six months' service, 2 mechanics, 1 electrician, 1 gunsmith, and 4 shoemakers; total, 553.

(*e*) *Transport.*—Two companies, with 5 officers, 17 noncommissioned officers, 20 volunteers, 4 trumpeters, 30 men with two years' and 40 with six months' service, 1 mechanic, 1 locksmith, 1 carpenter, and 1 shoemaker; total, 120.

(*f*) *Medical corps.*—At the head of this are 3 surgeon-generals with the rank of brigadier-general, 5 army surgeons with the rank of colonel, 6 divisional surgeons with the rank of lieutenant-colonel, 6 brigade surgeons with the rank of major, and 50 regimental surgeons with the rank of captain. There are, in addition, 3 dentists and 2 assistant dentists, 1 senior apothecary with major's rank, 2 first-class apothecaries with captain's rank, and 32 apothecaries ranking with sublieutenants, 1 veterinary inspector with the rank of captain, 1 first-class veterinary surgeon, 6 second-class and 16 veterinary surgeons, ranking with first lieutenants, lieutenants, and sublieutenants, respectively. In addition there are 8 first-class and 35 second-class hospital orderlies.

The spiritual welfare of the army is looked after by 1 vicar-general with the rank of colonel and 16 chaplains with the rank of captain. For gymnastics and fencing there are 2 professors, 40 instructors, and 27 assistants. The military music consists of 1 musical inspector, 18 bandmasters, 16 assistant bandmasters, 70 first-class, 100 second-class, 136 third-class musicians, and 427 pupils. Cyclists and keepers of archives are formed into one company consisting of 10 officers, 50 noncommissioned officers, and 25 volunteers. In addition to officers serving with the troops there are also 6 lieutenant-colonels and 30 majors on the active list, 10 lieutenant-colonels and 9 majors still in the service, and 3 lieutenant-colonels, 2 majors, 3 captains, 4 first lieutenants, 4 lieutenants, and 5 sublieutenants, who have retired from the service, and who are in various employments.—*Militar Wochenblatt.*

AUSTRIA-HUNGARY.

CHANGES IN ORGANIZATION IN THE AUSTRO-HUNGARIAN ARMY.

We have already reported upon the proposed increase of the Honved and landwehr artillery, for which the corresponding demands are to be presented in the budget for 1905, and we are to-day in position to name still further changes in organization which are to be carried out on the basis of this year's army budget for the Austro-Hungarian army.

The principle applied in the development of the Bosnian-Herzegovinian troops is slow development, gradual increase of capacity, with special reference to the internal, political, social, and financial conditions of the land. While the peace strength of the army and landwehr amounts to 0.74 of 1 per cent of the population, the war strength to 2.7 per cent, the percentage relation in the Bosnian-Herzegovinian troops is in peace 0.3 of 1 per cent and in war 1.1 per cent. The occupied territory therefore does not give quite one-half as many recruits as the Monarchy. The land has, therefore, to bring up its present peace strength of 4,500 men to 12,500 men; for the war strength 46,000 instead of 20,000. A whole infantry corps could therefore be formed. At present there exists four infantry regiments and a rifle battalion; there are to be newly added four rifle battalions. Their union in a Bosnian-Herzegovinian brigade is improbable.

A new telegraph battalion is to be formed; then, for every infantry troop division an infantry telegraph patrol, for every mountain brigade a mountain telegraph patrol. The instruction of these patrols (officers and men) is to be given in the telegraph schools at Tulln. Instead of the former light and normal bridge equipage there is to be a standard equipage. They hope in this way to save material. The wagon of materials is to be replaced by two pontoon wagons; thus more buoyant power with increased hauling capacity. The new field howitzers, too, have proven too heavy for the light equipage.

For the train, three new squadrons are planned, of which one is to be numbered 86, which was wanting heretofore, and two are for the mountain brigades of the Zara military department.

Machine-rifle detachments of two sections are to be provided for 10 cavalry troop divisions, and detachments of two rifles for 12 mountain brigades. The experiences in the present German colonial war have determined this decision.

In the infantry they have decided to lessen by 1 kilogram the load of the soldier in favor of an increased ammunition supply. Here, too, the experiences of the East Asiatic war have furnished the reasons. Long, often many day, fights, lengthy marches, wide detours are constant phenomena; equally so the difficulty of munition replacement. They have therefore issued to the troops for trial a new model of cartridge pouch. The new pouch, manufactured by a Hamburg firm, has a specially prepared leather. In the matter of the knapsack, exhaustive studies have shown that it is superior in field utility to that of any other system.

In the technical troops the increase of the telegraph and telephone apparatus is a requirement of modern warfare. The difficulty of operative and tactical direction in long advance marches, battle and shelter spaces is here the determining factor. Hereto, also, belong the simplification of bridge material, the increase of floating supports, and the increase of the river patrol pontoons against mine attacks.

The planned increase in the artillery of the standing army claims special interest. Of the 47 divisions of the Austro-Hungarian army, only two infantry divisions (the first and eighteenth in the Fifteenth Corps) have mountain artillery. Accordingly, 45 infantry troop divisions must be provided with divisional artillery regiments. But since only 42 such artillery regiments are on hand, three field artillery regiments must be newly created. They intend to retain the corps artillery, but it is to be strengthened by field howitzer divisions, and since for each corps, except the fifteenth in Serajewo, a division is required, 14 howitzer divisions are to be formed. It is doubtful, however, whether they will form the corps artillery solely of field howitzer divisions or whether they will also introduce cannon batteries; further, it is undecided whether the batteries shall be formed of four or six guns. It is said that they will wait to see what the experiences of the Russo-Japanese war indicate. Also for the question of caliber for the light field howitzers they will wait for the teachings of this war. From many sides comes the opinion that 10.5 cm. does not suffice for the caliber of these guns.

For the Tyrolean mountain battery division two narrow-gauge field batteries of four guns are to be newly formed. For the district of occupation one newly formed mountain battery is to be added to the existing 11 mountain batteries, and these are to be united into 3 mountain battery divisions of 4 batteries each. The object of this regulation lies in the decision to fit out the Fifteenth Corps as a fighting body with complete mountain equipment, and to make it suitable for use in the occupation district in case of any war. For the cavalry troop divisions there exist to-day 8 mounted battery divisions; two new ones are to be added. Austria-Hungary has at her disposal 5 cavalry troop divisions, 7 independent brigades, which in case of war are to be combined into from three to four divisions, and 4 Hungarian landwehr cavalry brigades, which constitute a division. In all, therefore, 10 divisions can be put into the field, for which two battery divisions are wanting. At the same time the former name, " mounted battery division," is to be changed to " artillery division."

A complete innovation results from the formation of siege howitzer divisions (15 cm. caliber). These are to be independent troop units with their own organizations (cadre), and it is intended to create in time one such howitzer division for every corps except the fifteenth.

In the foot artillery there have been up to now six regiments—three regiments of three battalions, three of two battalions, as well as three independent battalions. In consequence of the construction of fortifications in the occupation district in Tyrol and Galicia, two new battalions are to be added to the former 18 battalions.—*The International Review.*

* * * * *

LIGHT REFLECTORS FOR ARTILLERY IN THE AUSTRIAN ARMY.

In the Austrian army, also, as in the French army, a light-reflecting apparatus has been introduced which is to mark the effect of artillery fire and to constitute a worthy help both to the umpires judging the changing phases of the fight and to the troops finding themselves in the hostile fire. The apparatus, which even in dull weather can be used up to ranges of 3,000 meters, consists of a light-generating apparatus and an angle reflecting system, and is revolvable in such a way that one can throw a cone of light of from 80 to 150 meters diameter toward the object held under artillery fire.—*The International Review.*

PROPOSED ARMY REFORM IN AUSTRIA-HUNGARY.

Count Tisza, the Hungarian premier, recently made in the Hungarian Parliament the two important announcements that the length of active service in the Austro-Hungarian army is to be reduced from three years to two years, and that the Landwehr is to be provided with artillery.

The premier stated that he was not yet prepared to enter into the details of the changes to be effected, and the date on which they are to begin was not given. The cavalry and the horse artillery are to be excepted in the general reduction of the term of active service. For these two arms the present length of active service of three years will be continued and for all other arms it will be reduced to two years. The strength of the infantry and cavalry is not to be changed, but that of the artillery is to be increased. Since, under the new system, there will be but two classes of enlisted men in active service, instead of the three classes under the existing three years' term of service, the annual contingent of recruits must be increased in order to maintain the present effective strength of the army. If simultaneously with the adoption of the two years' term of active service the artillery be increased, this change will demand a further augmentation of the annual contingent of recruits. The reason given for the increase of the artillery is that this arm is not capable, on account of its inferior guns and of its numerical weakness, of efficiently performing its task in war. Each Landwehr infantry division is to be provided with a regiment of field artillery. The premier stated that the contemplated changes have the approval of the Austro-Hungarian minister of war, which means that they are also approved by the highest authority of the Monarchy.

With reference to the introduction of the two years' term of active service, it is to be supposed that no change from the present system will be attempted before 1906, as the contingent of recruits proposed for 1905 is the same as that voted for 1904. No report of any value can be made of this reform until the publication of the details of the new law shall afford the necessary definite data.

However, with reference to the statement that each Landwehr infantry division is to be given its own regiment of divisional artillery, some conclusions may already be drawn. There are 8 Austrian and 7 Bulgarian Landwehr infantry divisions. These will therefore require together 15 regiments of divisional artillery. How these are to be supplied is not announced, but it is thought that most, if not all, of them will be transferred from the common army—that is, from the Imperial and Royal army. In time of peace this army has 31 infantry divisions organized, one of which, the First, is stationed in Bosnia and Herzegovina, where the only artillery employed consists of mountain batteries and fortress companies. That leaves 30 infantry divisions to be supplied each with a regiment of divisional artillery.

In the common army there are 14 corps artillery regiments, one for each army corps, except the Fifteenth, which is stationed in Bosnia and Herzegovina, and 42 divisional artillery regiments. Therefore, the 14 corps regiments could be left with their present commands, each of the 30 organized infantry divisions of the common army outside of Bosnia and Herzegovina could retain its own divisional regiment, and 12 divisional regiments would remain. These could be assigned to the 15 Landwehr infantry divisions, thus requiring the creation of but 3 new divisional regiments in order to provide each Landwehr division with its own regiment of field artillery. Of course, 3 of the 14 corps artillery regiments could be assigned to the Landwehr divisions. These 3 regiments, with the 12 divisional regiments above mentioned, would supply all of the required Landwehr artillery without the creation of any new regiments. That the 8 Austrian and the 7 Hungarian Landwehr infantry divisions will each be provided with its own regiment of field artillery may be accepted as a fact. Where these regiments are to come from is, so far, largely a matter of conjecture for the public. Since the minister of war has been trying in vain for some time to obtain a sufficient increase in the strength of the army to enable him to man the new howitzer batteries, the material of which has been completed, the effort, if it should be made, to obtain enough men for 15 new regiments would appear to be decidedly hopeless.

During the maneuvers the Landwehr receives its divisional artillery from the common army. In case of war under the present organization it would obtain its artillery from the same source. In such cases the divisional artillery may come as a perfect stranger to the division to which it is assigned. The disadvantages of such a system are obvious. If any new regiments should be created, they would probably be given the present guns and other material of the artillery of the common army, as these guns are gradually replaced with the new quick-firing guns, until enough of the latter are completed for the armament of all the field artillery of both the common army and the Landwehr. In any case, it is the intention to have all the field artillery of the Monarchy ultimately armed with the same kind of modern gun.—*M. I. D., 1764–c.*

MILITARY PREPARATIONS IN AUSTRIA-HUNGARY.

As so much has been said on the subject of the recent military preparations in Austria-Hungary, it will be as well to give full details regarding the employment of the large sums which are to be spent in a comparatively short period of time.

For 1905 the following sums have been appropriated for the budget of the regular army:

	Ordinary.	Extraordinary.	Total ordinary and extraordinary.
	Crowns.	*Crowns.*	*Crowns.*
Ordinary army	282,259,143	19,640,252	301,899,395
War navy	42,869,440	8,156,970	51,026,410
Troops stationed in occupied territory		7,583,000	7,583,000
Total	325,128,583	35,380,222	360,508,805

A heavy extraordinary credit was besides applied for military expenses for 1904–5 of 163,176,000 crowns, to be divided in the following manner:

(*a*) For the regular army, 88,000,000 crowns; 10,000,000 to be employed during 1904, 78,000,000 during 1905.

(*b*) For the war navy, 75,176,000 crowns; 12,500,000 to be employed during 1904, 62,676,000 during 1905.

This credit of 163,176,000 crowns only represents part of the sum necessary to carry out the programme that the military administration has in mind, and which will cost altogether 337,956,000 crowns—that is, 217,000,000 crowns for the army and 120,956,000 crowns for the navy. This sum will be divided as follows:

	Army.	Navy.	Total.
	Crowns.	*Crowns.*	*Crowns.*
(*a*) In 1904	10,000,000	12,500,000	22,500,000
(*b*) In 1905	78,000,000	62,676,000	140,676,000
(*c*) After 1905	129,000,000	45,780,000	174,780,000
General total			337,956,000

The credit of 217,000,000 crowns for the army is to serve for the new guns (150,000,000 crowns) and for the purchase of equipment (67,000,000 crowns).

That for the navy, of 120,956,000 crowns, will be used in the following manner:

	Crowns.
To be used for the ships at present in course of construction to provide them with machinery, equipment, and ammunition	47,886,000
For the construction of new torpedo boats	34,000,000
For the construction of submarines and their stations	10,000,000
To complete the port of Pola and the Fasana Canal	6,700,000
For the guns of the "C" man-of-war (in dockyard) and for the providing of reserve guns	6,570,000
For the ammunition necessary to the *Archduke Frederick* (launched at the end of last April) and "C" man-of-war, monitors, and patrol vessels of the Danube fleet	7,200,000
For the increase in the ammunition to be distributed to the more antiquated vessels of the fleet	3,400,000
For reserve torpedoes	1,200,000
For coal and reserve supplies of the Pola maritime station	4,000,000

The sum to meet these requests of extraordinary credits will, it seems, be obtained by a 25-year redeemable loan, the interest of which will be about 27,000,000 crowns; which sum will be economized on the budgets of the army and navy in future years.

In the ordinary budget of the army are to be noted:

(*a*) Creation of 87 depot officers, chosen from among the field officers who are not physically qualified to bear the fatigues of war, and who will be sent to the Armeestad (sedentary position). One hundred and seventy-four of these officers are needed and the other 87 will be nominated in 1906.

(*b*) Increase of seven places for Armeestad captains.

(*c*) Creation of a place of accountant officer (corresponding to cadet); to this place 120 noncommissioned officers will be chosen from among those of the older noncommissioned officers who should desire to enter the accountant corps.

(*d*) Increase of the number of teaching and directing officers in the military institutes of education and instruction of 54 captains and 120 subalterns; in 1905 only 14 captains and 36 subalterns will be nominated.

(*e*) Creation of a corps of subsistence officers; in 1905, 45 sublieutenants of subsistence and 45 subsistence officers will be nominated.

(*f*) Definitive institution in Vienna of the course for aspiring subsistence officers, with all the necessary instructing staff.

(*g*) Amplification of the sum destined for prizes for reenlisting noncommissioned officers.

In the extraordinary budget are to be noted:

(*a*) The first installment of 700,000 crowns of the 2,100,000 that are considered necessary to bring the number of cartridges to be distributed to each soldier from 100 to 120.

(*b*) Purchase of four movable wireless telegraphy plants.

(*c*) Purchase of a steam tender for the Pola maritime station, which, besides the internal service, will also have to carry out the transportation of rations for the guards and detachments scattered among the maritime forts depending from the Pola station.

(*d*) For the amplification of the artillery fire school at the Hajmasker (Veszprim) target range, the sum of 1,000,000 crowns has been appropriated of the 4,000,000 which will eventually be used for this purpose.

In the ordinary budget of the navy are to be noted:

(*a*) Increase of the cadets of the first class, which will be brought from 30 to 100, and diminution of those of the second class, which from 150 will be brought down to 80.

(*b*) Increase of the force embarked on the vessels, of 2,160 men.

(*c*) Sixth and last installment of 1,666,000 crowns for the cruiser *San Giorgio.*

(*d*) Fifth and last but one installment of 4,300,000 crowns for the man-of-war *Archduke Charles.*

(*e*) Fourth installment of 4,300,000 crowns for the man-of-war *Archduke Frederic.*

(*f*) Second installment of 3,500,000 crowns for the "C" man-of-war.

(*g*) First installment of 2,053,000 crowns for the construction of 16 new torpedo boats (9 of the second class and 7 of the third class), for which the sum of 8,000,000 crowns has been foreseen as necessary.

In the extraordinary budget are to be noted:

(*a*) For the construction of a central electric station in the arsenal of Pola, 40,000 crowns.

(*b*) For the building of signal and observation stations in Istria and Dalmatia, 20,000 crowns.

(*c*) First installment for the arming of the "C" man-of-war, 500,000 crowns.

(*d*) First installment for the ammunition of the man-of-war *Archduke Frederic*, 300,000 crowns.

(*e*) First installment of ammunition for the Danubian monitors *Temes* and *Bodrog*, launched at the end of last March, and for the 5 patrolling vessels in course of construction, 200,000 crowns.—*Esercito Italiano.*

BUDGET OF THE AUSTRIAN LANDWEHR FOR 1905.

In addition to the active Landwehr, the strength of which is given in the appended table, the budget provides for the active service of 40 officers and 14,000 men of the Ersatz reserve for 8 weeks and of 1,630 officers and 91,725 men of this reserve for 4 weeks during the year. The Landwehr has its own Ersatz reserve, which is, of course, distinct from the Ersatz reserve of the common, or Austro-Hungarian, army.

The following are the numbers of first reservists and Ersatz reservists of the common army to be called into active service in the year 1905:

Infantry and rifles: 235,700 men for 13 days; 4,900 men for 24 days.

Cavalry: 8,400 men for 21 days.

Field artillery: 9,400 men for 13 days.

Fortress artillery: 5,600 men for 13 days.

Engineers: 5,400 men for 13 days; 250 men for 24 days.

Railway and telegraph regiment: 2,300 men for 13 days.

Train: 6,000 men for 13 days.

Except for 172,200 men of the infantry and rifles, the number of days of active service given above is in addition to the time required by the reservists to join their respective commands and to return to their homes. The budgetary estimate of this time is 4 days. The total number of reservists of all kinds of the common army to receive practical military exercise and instruction for at least 13 days in the year 1905 is therefore 282,900 officers and men. The first reservists are those who have completed their term of three years' service with the colors.

Budget of the Austrian Landwehr for 1905 compared with that for 1904.

Branch of the service.	1905.	1904.	Increase.	Decrease.
	Crowns.	*Crowns.*	*Crowns.*	*Crowns.*
Central administration (ministry of national defense, etc.)	1,675,000	1,651,900	23,687	
Landwehr	43,645,093	43,302,352	342,741	
Installment for construction of barracks in Galicia	50,000	100,000		50,000
Recruiting expenses, mileage, preparation for mobilization, etc	158,220	159,920		1,700
Military endowments	74,800	72,400		2,400
Military police	534,199	472,956		61,243
Gendarmerie	18,633,440	17,847,396		786,044
Total	64,771,339	63,606,924	1,164,415	
Increase and balance on hand	1,015,521	989,248		
Net amount required	63,755,818	62,617,676	1,138,142	

Budgetary strength of the Austrian Landwehr for 1905.

Branch of the service.	Officers.	Men.
Central administration	[a]77	[a]42
Landwehr:		
Commander in chief	16	12
Superior and post commands	248	297
38 regiments (115 battalions) of infantry	2,941	28,551
6 regiments of cavalry (uhlans), 2 squadrons of Tyrolian mounted rifles, and 1 squadron of Dalmatian mounted rifles	304	3,548
Military schools	89	[b]1,178
Equipment depots	88	161
Headquarters of national defense in Tyrol and Vorarlberg	6	3
Military police	9	582
Gendarmerie	289	12,156
Total in active service	4,017	46,530

[a] The corresponding figures for 1904 included a number of civilian officials and clerks.

[b] Includes 566 cadets.

—*M. I. D. 1852.*

THE AUSTRIAN LANDWEHR.

Certain changes have been recently ordered in the organization of the Austrian Landwehr, the general effect of which is to increase slightly the peace strength of the various units of which this part of the armed strength of the Empire is composed. Under the new organization the peace strength of a company of infantry will be as follows:

One captain (mounted), 3 lieutenants,[a] 1 cadet,[b] 1 first sergeant, one noncommissioned officer clerk, 2 sergeants, 4 corporals, 4 lance corporals, 1 trumpeter,[c] 1 drummer,[c] 40 privates, and 4 officers' servants; total 63.

A regiment of infantry will have hereafter 68 officers, 748 men, and 8 public horses; formerly it had 54 officers, 667 men, and 8 public horses. This is the strength of a regiment of 3 battalions. The Twenty-third Landwehr Infantry Regiment, stationed at Zara, in Dalmatia, has 4 battalions. It has under the new organization 88 officers, 988 men, and 10 public horses; formerly it had about 75 officers, 888 men, and 10 public horses.

---

[a] It seems that 3 lieutenants were carried on the former paper organization of the company, but that only 2 were in actual service. The third is now to be supplied.

[b] There is to be 1 cadet for each battalion of a regiment. These cadets are graduates of the cadet schools and not of the military academies. The graduates of the military academies receive commissions as lieutenants immediately upon graduation.

[c] In the former organization the company had 1 trumpeter, or 1 drummer. Now it is to have 1 trumpeter and 1 drummer.

A squadron of cavalry will have in the future 5 officers, 73 men, 4 public horses (for the use of officers), 7 private horses, 36 troop horses, and 20 remounts. A regiment of cavalry will have 45 officers, 495 men, and 444 horses.

New instructions have also been published for the Landwehr field officer's course. This course of instruction is held in Vienna and lasts from January 2 to May 15; that is, 4½ months. While it is called a field officer's course, the student officers are captains. The object of the instruction is to prepare captains for the duties of field officers.

The following is the substance of the new instructions:

The course of instruction will consist principally of practical exercises which, in character, extent, and order of succession, correspond to the provisions of the regulations for the instruction of officers and cadets in the schools for officers in the imperial and royal army. Formal examinations will not be held. The course will begin with theoretical instruction, the duration of which will depend upon circumstances. The classification of the student officers will be based upon their theoretical knowledge and upon the efficiency demonstrated in their execution of the practical exercises. As a rule the instruction will be given indoors until the 15th of April, and only once or twice a week in the open. After this date the exercises will take place almost entirely in the open.

The exercises will also comprise visits to the battlefields; practice rides; attendance at special troop exercises, rifle practice, firing experiments and construction of military bridges; inspection of technical establishments and participation in the course of instruction at the army small-arms firing school at Bruck, on the Leitha.

The last three weeks of the course will be spent in the study of localities which, on account of their situation and of their topography, are specially important or interesting from a military point of view, for the purpose of giving the student officers an opportunity to extend their knowledge of the influence exercised by accidents of the ground upon troop leading in battle. During these last three weeks permanent fortifications will also be visited. These journeys will be utilized for discussions upon the relations of topography, field fortifications, and the organization of an army, to the leading of troops.

Special lectures will be delivered and discussions will be held upon the subjects of permanent fortifications, military establishments, military law, hippology, etc.

The school staff will consist of one colonel of Landwehr infantry, as commandant; one captain, as adjutant; 3 lieutenant-colonels or majors of the general staff, as permanent instructors; as many temporary and detailed instructors as may be required; one noncommissioned officer, as clerk; 5 orderlies, and 49 officers' servants and grooms. The number of student officers will be 40. The latter are all captains of infantry and of cavalry. The Landwehr has no artillery. An officer's servant is an enlisted man. He wears a uniform, but does not carry any arms.

A few general remarks concerning the Austrian Landwehr, which will also apply to the Honved, or Hungarian Landwehr, except in minor details, may be of interest.

The Austrian Landwehr infantry consists of 36 regiments, 35 of which have 3 battalions each and one of which has 4 battalions, and of 2 regiments of rifles, the latter being recruited in the provinces of the Tyrol and of Vararlberg. Each battalion has 4 companies.

The peace strength of the company and of the regiment is given above. The war strength of the various units is the same as that of the corresponding units of the army, that is, the company has 250 men, the battalion 1,000 men, and the regiment 3,000 or 4,000 men, according to the number of its battalions.

The armament, equipment, and all the auxiliary services and kind of training are the same as those of the army.

The Landwehr cavalry consists of 6 regiments of uhlans, 2 squadrons of Tyrolese mounted rifles, and one squadron of Dalmatian mounted rifles. Each regiment has 6 active squadrons, 1 pioneer platoon, 1 telegraph detachment, and 1 depot squadron, the latter existing, in fact, only in time of war.

The peace strength of the squadron and of the regiment is given above. The war strength of the various units is the same as that of the corresponding units of the army. For the squadron, this strength is 5 officers, 160 men, and 160 horses; for the regiment, 40 officers, 1,100 men, and 1,100 horses. The combatant strength of the latter is about 930.

The general conception of a Landwehr is that of a second line of the armed strength of a State, or that of a reserve for the first line, or active army; and it is generally supposed that the enlisted men of the Landwehr have completed the obligatory term of active service in the army. But the Landwehr of Austria, as well as that of Hungary, is recruited directly from the young men of the State found to be physically qualified for military service when they are 21 years old. In other words, it is recruited in the same way as is the army. But there is a great difference in the length of active service in these two divisions of the armed strength of the Empire. This service in the army lasts for three years, while in the Landwehr it lasts for only two years. It is therefore a matter of the greatest importance to a recruit whether he is assigned to the army or to the Landwehr. This question is determined by the drawing of lots.

The annual contingent of troops for the Austrian Landwehr is 10,413, and that of the Hungarian Landwehr 12,500. The peace strength of the Austrian Landwehr is 50,286 officers and men; that of the Hungarian Landwehr, about 31,263 officers and men. The war strength of the first, after deducting 8 per cent for loss in mobilization, is 164,000; that of the second, after a similar deduction, 164,000; total, 328,000. As these are in fact, if not in name, troops of the first line, they should be reckoned with the thoroughly trained troops of the first line that Austria-Hungary would have immediately available in case of war.

The annual contingent of recruits for the common army is 103,100. The men of the common army serve three years with the colors and seven years in the reserve. Deducting 4 per cent from each contingent for the annual loss through death, incapacity, and other causes, and deducting 8 per cent for loss in mobilization, the available and really serviceable strength of the common army[a] for war should be about 800,000. If to this effective we add that of the Austrian and Hungarian Landwehren, we find that Austria-Hungary should have, in case of mobilization, 1,128,000 thoroughly trained men, actually available and not existing merely on paper, physically fit for immediate operations.

The losses in the field armies would be filled first from the Ersatz reserve, and finally from the Landsturm. The Ersatz reserve is called into active service in time of peace for only three periods of training of four weeks each, except in case of emergency, when it may be continued in service as long as the emergency lasts. The Landsturm receives no compulsory military training in time of peace. The strength of these two reserves, the Ersatz reserve and the Landsturm, can not be learned.

INCREASE OF ARTILLERY, AUSTRIA-HUNGARY.

The project of the Austro-Hungarian war budget anticipates that this year the question of reorganization and increase of artillery will be solved. This is a question that has been prolonged for three years.

Austria-Hungary only possesses 42 regiments of divisional field artillery for its 47 divisions. Of these, the two of the Fifteenth Corps, of Bosnia and Herzegovina, are provided with mountain artillery; therefore they are short three regiments of field artillery.

The corps artillery will be reinforced by a group of howitzers for each army corps, except the Fifteenth. Therefore fourteen groups ought to be formed. It is not yet known whether these howitzer batteries will be of four or six pieces, nor has their caliber been definitely fixed upon; it will probably be of 10.5 cm., like those in use in the German army.

Besides, two new mountain batteries on wheels, narrow gauge, will be created to reinforce the groups of the Tyrol and one mountain battery to bring up to twelve the number of the Bosnia-Herzegovina batteries.

---

[a] The "common army" is the regular army maintained by Austria and Hungary together. The Landwehr of each State is maintained separately.

There has also been talk of the constitution of a group of siege howitzers of 15 cm. and of the project of forming, later, fourteen similar groups for the army corps.

Lastly, two new battalions of fortress artillery will be created.—*M. I. D., 1366-h.*

REORGANIZATION OF THE AUSTRO-HUNGARIAN ARTILLERY.

The great news of the day in the neighboring kingdom is the announcement finally given that the desires long ago expressed by the Hungarian opposition are about to be satisfied. The Hungarian militia (Honved) is to have its own artillery. This was said by President Tisza at the meeting of the Hungarian Chamber on the 10th instant.

By this concession it is evident that the Government intends to obtain easily the increase of military expenses that it needs to reorganize the artillery according to the plans made. But the official reasoning is instead this: The Government never opposed the wishes of the Hungarians for the pure pleasure of opposing them, but because it was impossible for it to agree to them owing to the diversity of time of service existing between the artillery (3 years) and the Honved (2 years); now this impossibility no longer exists, with the two years' time of service, which, owing to a notable increase of contingent, will be extended to the whole army, excepting cavalry and mounted artillery.

Every division of Honved will therefore have a regiment of artillery, probably of six batteries.

Naturally, if the divisions of Hungarian Honved are to have artillery of their own, other regiments of Landwehr will be formed in proportion to the divisions of Austrian Landwehr.

At present the Austro-Hungarian field artillery is composed of 14 corps regiments and 42 divisional regiments—that is, four regiments for every army corps. (The Fifteenth Corps—Bosnia-Herzegovina—has nothing but mountain artillery.) There are altogether 224 batteries of 8 pieces—that is, 1,792 guns.

There are 8 Landwehr divisions and 7 Honved divisions; therefore 15 new regiments will be formed. And as, at the same time, the regiments will be transformed to having 6 batteries of 6 rapid-firing guns there will be, altogether, 71 regiments of guns—that is, 426 batteries or 2,556 guns.

The increase is of 764 guns: and, as it can be considered that a rapid-firing gun is worth at least one ordinary one and a half, so the complexive increase of the Austro-Hungarian field artillery will result—as far as regards the guns—in over double the number.

Besides there must be added 14 regiments of field howitzers which are being formed.

It is known, though not generally, that to these 2,556 guns and 500 howitzers that Austria-Hungary is preparing to put into the field we could oppose 1,116 guns and no howitzers; altogether less than one-third.

And this in spite of the daily lessons on the importance of a numerous artillery that the war in Manchuria is giving us.

The Viennese political circles are not too well pleased with the news given them by President Tisza. They consider that the institution of a Honved artillery is too great a concession to the Magyars, as it is well understood that in this artillery the language is to be Magyar and not German. This is the case for all the Honved troops.

And meanwhile who is to provide the money for the expenses of the regiments of the Honved artillery? The Tagespost, of Graz, remarks:

"The common army budget must be exclusively used for the common army; drawing from the ordinary budget for the Honved expenses would not for a moment be countenanced. These drawings are sometimes used in uncertain undertakings, to hide from the shareholders how losses borne are covered up or how the revenues of some deficient branches are increased. But in the bookkeeping between the Empire and the two States everything must be perfectly clear; otherwise some fine day, following the desires of the president of the Hungarian ministers, all the materiel of the Vienna arsenal, or of some other depot of the common army, might be quite easily taken from the budget and used for the Honved.

What has been accorded for the common army weighs in the proportion of 66 per cent on Austria and 34 per cent on

Hungary. It would therefore be very unjust if Austria were not only to pay its own Landwehr and give 66 per cent for the common army, but contribute besides with this 66 per cent to the expenses of the Honved. It is clear that the guns of the 8 artillery regiments which are to be formed for the Landwehr will have to be paid for by us Austrians, but those of the 7 Honved regiments might well be paid for by the Hungarians."

Meanwhile the Neue Presse of the 10th instant stated that the Government is to immediately ask the Austrian Chamber of Deputies for the authorization to obtain a loan of 140 million crowns to cover the credits lately voted for the delegations.

As is known, it was at first said that it had been decided to ask only for the amount due this year.

Therefore it appears that the reorganization is to be hastened.—*Italia Militaire e Marina.*

NEW EXERCISE REGULATIONS FOR THE FORTRESS ARTILLERY IN AUSTRIA-HUNGARY.

The new regulations which have been experimented with for some time past by the troops, have recently been definitely adopted. They contain many points worthy of note.

I. DISPOSITIONS.

The regulation battery is composed of from 2 to 6 pieces, the cannon batteries are composed of 6 pieces, and the howitzer batteries of 4; and they are manned by a company of fortress artillery.

The company commander directs the fire only in the beginning and during the principal phases of an action; a subaltern, called "director of fire," attends to the rest, while another subaltern acts as his aid. The sections, of 2 pieces, are commanded by a noncommissioned officer, and 3 other noncommissioned officers are at the disposal of the commander. An orderly and telephonists also assist him.

For a battery of 6 pieces, therefore, 1 captain, 2 subalterns, 8 noncommissioned officers, and about 53 men are necessary.

The battery commander has charge of the selection of the target, of the establishing of the elements of fire, of the steps to be taken for night firing, and of repulsing near-by attacks; it is therefore the commander's duty to determine when it is necessary to suspend fire temporarily, in order to use carbines.

As far as possible, the companies of the same battalion should be assigned to batteries of pieces of the same kind; they then constitute a group of batteries at the head of which is the battalion commander. A group can not consist of more than 4 batteries. The head of the group superintends the construction of the armament and the opening of fire of the dependent batteries; and at the beginning of fire and in the most important moments of the action he directs the fire itself. Before firing begins he assigns to each battery the section of country it is to cover, giving them such data as he may know, and, if possible· sketches of the target; he then orders the sort of projectiles to be used and regulates the celerity of fire only when this should be necessary for the observation of results, the use of ammunition, or the general situation of the engagement.

If the target is wide each battery fires independently on its own section of country; if, instead, the target is limited or a battery is charged with getting the range, or the order in which the batteries are to fire has been prearranged, the batteries operate of their own accord, but with battery volleys.

All the attacking or defending batteries, together with their parks and refurnishing depots, constitute "section artillery" depending from their own artillery commander, who keeps near the general commander of a section. He regulates the action of the troops and of dependent establishments, arranging of his own initiative whatever is necessary to the activity of the batteries; he communicates his orders and arrangements by telephone or optical signals, or by means of messengers on horseback or on bicycles.

II. EMPLOYMENT.

The general commander, as a rule, only indicates the locality and the moment in which fortress artillery must co-operate in an engagement, giving in a general way the idea of the tasks assigned them. The commander of fortress artillery must afterwards draw from these the necessary projects of employment and the orders that the general commander must afterwards impart to the fortress artillery.

The fundamental idea must be that of obtaining the superiority of fire, and, whenever possible, take the enemy by surprise. Nevertheless, all measures calculated to favor the opportune arrival of reenforcements of necessary mobile artillery reserves should be foreseen and predisposed.

All measures should be taken and all circumstances taken advantage of calculated to give the enemy trouble in the exploration of targets and the observation of fire; and vice versa, the fortress artillery must exercise all possible care in choosing advantageous conditions for exploration and its own reconnoissance. It will therefore be of the first necessity to provide accurate exploration of targets by the proper employment of the means provided for this purpose and to arrange a convenient system of optical or telephonic apparatus among well-chosen stations of observation, to the keeping of which system continual attention should be afterwards given.

Whenever possible fire should open simultaneously and by surprise with all the pieces available and continued energetically. Such fire ought also to be kept up, in some cases, during the night, especially against the enemy's lines of communication and reserves.

In attack the field artillery of the siege body and the heavy howitzer brigades attached to them should support the troops in the struggle to gain the approaches, disturb the work of the defenders by harrassing their lines of communication, their works, and their intervals, even at the greatest distances, and attempt to destroy the enemy's observatories and captive balloons.

As a rule, before the heavy artillery advances, artificial redoubts should be built, or at least the position should be masked. The howitzer artillery's essential task is to break down the enemy's artillery, shake the infantry, destroy the freedom of counter attack in the works of defense; and when the range allows, reaching the main body, and this should be attacked from the very beginning of operations. When an attack is to be carried out, a violent fire should be opened against the point to be attacked.

The defending artillery should, of its own initiative, oppose the carrying out of the attacker's intentions and energetically support the counter offensive of its own party.

The fortress once placed in condition to resist the attack, the defending artillery must pick out with fire the most important points of the attacking body.

The artillery of the redoubts and of the surrounding batteries, temporarily reenforced by movable pieces, must oppose in every possible way the efforts of such of the enemy's artillery as should attempt to take up favorable attacking positions and to disturb all this zone, especially the roads, the field railways, the bridges, etc. This fire should be especially violent when the attackers are attempting to establish depots and bring up their heavy artillery.

As soon as the direction of the attack is clear, all efforts should be made to bring into line as fast as possible the reserve artillery, so as to gain superiority of fire over the enemy.

At the beginning of hostilities the defenders are naturally superior to the attackers in number of pieces, better knowledge of the country, and easier refurnishment of ammunition. They must therefore strive to make the best possible use of these momentary advantages.—*Italia Militaire e Marina.*

SANITARY STATISTICS.

The report of the sanitary statistics of the Austro-Hungarian army for the year 1902 is based on an average effective of 296,913, rank and file. There were altogether 190,365 cases of sickness, or 64 per cent, of whom 97,364, or 32.8 per cent, were tended in the hospitals. In 1901 the proportion of the number of sick amounted to 66 per cent; this year consequently shows a slight decrease in the percentage. The number of deaths for 1902 amounted to 699 men, not including 349 suicides, or 0.235 per cent, as against 0.244 per cent in 1901.—*United Service Magazine.*

MOTOR CARS.

The importance of motors in war time has decided the Austro-Hungarian war minister to organize a Landsturm motor corps. This corps is divided into three groups, viz, officers carrying orders, drivers for peace maneuvers, and members undertaking to provide motors for the army in war time.

During maneuvers motorists are attached to the headquarters. The first group is specially charged with the transmission of orders and the transport of general officers and the members of their staffs; only persons of Austro-Hungarian nationality may belong to it, of the rank of supernumerary officer, and who have already gone through maneuvers as motorists. A special commission lays down the value of the proposed vehicles; a 2½ horsepower is required for motor cycles, 5 horsepower for small cars, and 8 horsepower for larger cars. The military administration undertakes the feeding of the chaffeurs and provides the fuel; it gives a daily rate of pay of 30 kroner (1 kroner= about 9d. in English money) per motor car, and of 6 kroner per motor cycle. In each army corps staff a list is kept of all soldiers of the regular army and reserve who may be employed as drivers of motor cycles, motor cars, or motor traction engines.—*United Service Magazine.*

MOTOR CARS FOR TRANSPORTATION OF STORES.

In consequence of the preliminary experiments which took place last year, the Austro-Hungarian military administration has this year attached, as a tentative measure, some motor trucks to the subsistence magazines at Vienna, Prague, Gratz, Cracovie, and Przemysl for the transport of provisions, forage, and bedding from the magazines to the barracks and garrison establishments. The Reichswehr remarks that the above means of locomotion is more economical than animal traction, and is superior to all others as regards rapidity of transport and facility of loading. Under these conditions it is highly probable that the present tentative measure will shortly become a permanent one.—*United Service Magazine.*

SCHOOL OF TELEGRAPHY.

The Reichswehr announces that during 1904–5 there will be organized, for the first time in the Austro-Hungarian army, an infantry telegraph course, to be held at Tulin, similar to the one already instituted for cavalry. As is the case in the latter, the object of the new course will be to familiarize officers and men of infantry corps with the field telegraph and telephone service. To be admitted to the course, officers must have served for at least two years with their regiments. The course will this year be directed by a captain of the railway and telegraph regiment, assisted by 4 infantry officers as professors and by 17 noncommissioned officers as assistants. It will be attended by 7 sublieutenants and 159 noncommissioned officers and men of the infantry, of whom 2 officers and 20 men will belong to the Landwehr.

The cavalry telegraph course will be attended by 11 sublieutenants and 84 men; 12 noncommissioned officers will be employed as assistant instructors. The period of both courses is for 9 months, from November 1, 1904, to July 31. 1905.—*United Service Magazine.*

BOLIVIA.

THE ARMY.

The military forces of the South American Republic of Bolivia consist of the regular army and the national guard. By the laws of April 6, 1875, and of January 31, 1880, universal service was already introduced into the country. Every Bolivian is liable for military service between the ages of 21 and 40. From the age of 21 to that of 25 years he belongs to the regular army, in which he spends two years with the colors. From thence he passes into the ordinary reserve, in which he remains till the age of 30. During the remaining 10 years he serves in the special reserve. Priests, those unfit for the service, criminals, etc., are not required to serve. The following are released after serving for 6 months: Only sons and sole supports of widows, etc.; sons of those who have fallen in the war; young men who are candidates for state educational establishments, or those who have received a certificate of education. Those who are exempted from service, with the exception of criminals, pay a fine of 5 bolivianos (1 boliviano = 1s. 9d. in English money) half yearly for the 2 years which they should have spent with the colors. Those who are released after 6 months' military service pay the same sum for the remaining period of service, viz, for 18 months.

The country of the Republic is divided into 9 military districts, viz: La Paz, Beni, Cochabamba, Oruro, Potosi, Santa Cruz, Chuquisaca, Tarija, and Litoral. There is, in addition, a special military administration in the southern portion of the country in the territory of Colonia. In the principal town of each district there is a major as chief of the departmental general staff, who is under the orders of the general commanding. The regular army consists of 5 infantry battalions, mountain artillery, and 1 cavalry regiment. In addition, in every district there are some small commands and a few small garrisons at the different frontier stations of the country. The strength of the units is determined every year by the National Congress. The personnel of the ministry, an arms and an inspection group, the corps of officers, the general administration, the military law court, and the board on fitness for the army belong to the army administration. The general staff consists of a chief of the general staff of the army, 3 colonels and detachment commanders, 3 majors, 3 European officers, 2 captains, and 2 first lieutenants. Under the general staff are the military academy, the commissariat, the military college, and higher school.

Infantry battalions consist, on an average, of 1 colonel, 1 lieutenant-colonel, 1 major, 6 captains, 4 first lieutenants, 5 lieutenants, 10 sublieutenants, 72 noncommissioned officers, 10 bandsmen, 2 drummers, and 220 men, exclusive of the Third Battalion, which is only 150 strong. In addition to the above complement, a surgeon and a bandmaster must be added. The artillery regiment consists of 1 colonel, 2 lieutenant-colonels, 1 major, 5 captains, 4 first lieutenants, 6 lieutenants, 6 sublieutenants, 1 surgeon, 1 bandmaster, 39 noncommissioned officers, and 184 men. The "Abaroa" cavalry regiment consists of 1 colonel, 2 lieutenant-colonels, 1 major, 7 captains, 5 first lieutenants, 6 lieutenants, 10 sublieutenants, 1 surgeon, 1 staff trumpeter, 74 noncommissioned officers, and 160 men. The commissariat has 1 colonel, 3 lieutenant-colonels, 3 majors, 5 captains, 2 first lieutenants, 8 lieutenants, 2 sublieutenants, 14 noncommissioned officers, and 59 men. The soldiers' schools have a personnel of 2 staff officers, 10 sublieutenants, 30 noncommissioned officers, and 90 men; the military college, one of 1 lieutenant-colonel, 2 majors, 2 captains, 2 surgeons, 1 sublieutenant, and 150 men.

The strength of the various commands in the districts vary, according to the size of the latter, from 20 to 80 men. The detachments are commanded sometimes by staff officers and captains and sometimes by first lieutenants and lieutenants. They are quartered in Tarija, Santa Cruz, Trinidad, Porto Suarez, Uyani, Mapiri, and Tupisa. The small garrisons in Caiza, Creveaux, and Murillo, consisting of about 20 men each, are commanded by lieutenants.—*Journal of the Royal United Service Institution.*

BRAZIL.

THE NAVY.

On the 6th of December last the Brazilian Senate passed, at its second reading, a bill for the new formation of the navy. The programme of construction has been decided upon as follows: Six battleships of 13,000 tons each, of the English *Triumph* class; 3 armored cruisers of 9,500 tons each, of the Russian *Bayan* class; 6 torpedo-boat destroyers of 400 tons each; 6 torpedo boats of 300, and 6 of 50 tons each; 3 submarines and 1 transport of 6,000 tons. It is not decided yet where these vessels will be armed and plated, but according to the papers this will probably be carried out in England.—*United Service Magazine.*

BULGARIA.

THE AUTOMATIC PISTOL.

The Bulgarian Government has adopted the Borchardt-Lüger automatic pistol, called the "Parabelum," for the armament of officers of all branches of the service. The official designation of the weapon is "Automatic pistol, model 1903." The Government will provide this weapon at a cost of 65 francs, and cartridges at 6.25 francs the hundred. The Borchardt-Lüger pistol is already in use in the Swiss army.—*United Service Magazine.*

NEW FIELD GUN.

Bulgaria has placed an order amounting to 26,000,000 francs with the Schneider firm at Creuzot for 81 quick-firing batteries, with 4 guns and 9 ammunition wagons per battery. The gun is very similar to the one already in use in France, but weighs less; is protected by shields 4 mm. thick and weighs 1,007 kilograms. The ammunition wagons are precisely similar to the French.—*United Service Magazine.*

CHINA.

EXISTING CONDITION OF MILITARY AFFAIRS.

In the discussion of the possibilities which might occur during the prolonged course of the war in the Far East, the armed strength of China would conceivably be taken into consideration, and in doing so every soldierly quality is frequently denied to the Chinese troops. Nothing could be more erroneous than this point of view. Against it may be set the following facts: That for many years German instructors in China have been laboriously engaged in active military work, and that for two years nearly 200 Japanese officers have been in the Chinese service in order to train an efficient army for the neighboring nation. In order to obtain an accurate picture of the, even at the present day, somewhat complicated condition of Chinese military matters and of the troops available for the defense of the country, it is best to strictly discriminate between the old and the new army, and to draw one's conclusions for oneself. To the old army belong (apart from the Mongolian landsturm and the Thibetan militia, which need not here be taken into consideration) the Manchu, or "Banner troops," and the "Green Flags," or provincial troops. Details of the origin and former organization of these troops have already been given in the Military Notes in the Journal for July, 1903.

It is evident, without further words, that the great number of the above-mentioned troops could advance no pretensions as an efficient military force, and that therefore an entirely new army on a modern basis must be formed if the military consideration of the Middle Kingdom was to be of any importance. Old Li Hung Chang was called upon to solve these difficult problems. He had already proved himself a savior in time of need, and it was owing to earlier influence that German instructors had been obtained for training the Chinese army. Under this guidance the best elements of banner and provincial troops were gradually formed into two armies, which, under the designation of Pei-yang army in the Pe-chi-li Province, and Hu-pei army in the province of the same name, form the elite of the present Chinese army, and are destined to carry the land forces of the country to a new prime. Li Hung Chang did not live to see the consummation of his work, for he died before it first began to bear fruit, and discipline and order obtained in the ranks of the newly raised troops. But Chang Shi Tung, the present governor-general of the Hu-pei Province, as well as Wang-Shi-Tai, the existing viceroy of Pe-chi-li, have taken up Li Hung Chang's work with the greatest zeal, and, supported by a numerous Japanese personnel, and with the help of individual military instructors, have already gained very respectable results. Especially conspicuous are those obtained by Wang-Shi-Tai, whose army, with the station of Wu-tang, of 7,700 men and 60 guns, is now reckoned the elite of the Chinese army.

The Pei-yang army, too, enjoys a good reputation, but it still lacks uniformity in its training and in its methods of the performance of military duties. This failure is partly accounted for by the fact that the eight groups into which the army is divided are quartered great distances from one another and the authorities have not yet been able to find a sufficient training personnel for each group. The best trained of this army, whose combined strength amounts to 37,000 men and 194, in part, new guns, are the North China troops, which, with 9,030 men and 45 guns, have their headquarters in Pao-ting-su, and at present guard the frontier against Russia on the Liao-ho. They would, therefore, too, be those troops on whose support in the first line the Japanese could count upon if ever there should be an alliance between the two kindred nations. The right and left wings of the Wu-wei corps—two other groups of the Pei-yang army, which consist of 16,280 men and 82 guns, are quartered in Peking, Nu-Chang, and Chung-chou—are also favorably mentioned, after they had latterly been trained under Japanese officers. The "Strong" corps, the Huei corps, and the "Brave" corps, numbering altogether 9,000 men, appear to be still somewhat backward, probably because their instructors—discharged Chinese military cadets—are too young and inexperienced for their heavy task.

To all appearance the authorities are not satisfied to remain as they are and to content themselves with present results. On the contrary, orders have been issued that troops in other provinces should be trained on the Pei-yang and Hu-pei model. In the meanwhile it is well to remember that the military equipment of China, the work in the perfecting of her army, and the results achieved are by no means such poor stuff as there is an inclination still to consider them from reports drawn from former times. Though the work of reform is not yet completed it behooves us, nevertheless, to follow the same with attention, so as not to arrive at a distorted judgment.—*Militär Wochenblatt.*

DENMARK.

MACHINE GUNS FOR CAVALRY.

The Internationale Revue gives an account of some trials made in Denmark with a view to arming the cavalry with a very light species of machine gun called "Rekylgewaer," or recoiling rifle, the invention of the Danish war minister, Major General Modsen. This weapon has been adopted by Denmark, Sweden, and Norway.

In Denmark every squadron of hussars has been given three of these weapons and a led horse to carry the ammunition. Three men form the machine-gun section. The weapon is carried on the left side of the saddle, hanging behind the rider's thigh; two cartridge bags, containing 10 to 16 cartridge bands, are attached to the left of the front fork of the saddle. As a counterweight, the horse's forage and the rider's equipment are carried on the right of the saddle. The total weight carried by the horse thus equipped with the rifle and 300 cartridges does not exceed 91 pounds. The ammunition horse carries six cartridge bags on a saddle specially designed for them. The "Rekylgewaer" itself does not weigh more than 13½ pounds—that is to say, far less than the machine guns already in use in most armies. It is the same length as the cavalry carbine and is worked by one man. It is very quickly prepared for action and offers a considerably smaller target than the machine gun, and the trooper managing it can remain in the ranks during all movements of the squadron. The rapidity of its fire amounts to 750 shots a minute and the initial velocity is 2,340 feet—that is to say, that at least the same results may be obtained with this weapon as with the machine gun.

The introduction of this weapon will give a great power to cavalry fire action without the inconvenience of dismounted action, during which a large proportion of the personnel is merely employed in holding horses, whilst they are at the same time exposed without defense to attacks by hostile cavalry. By means of the "Rekylgewaer" the squadron can almost always remain mounted and need only employ those weapons for fire action. Three well-trained men can fire 144 shots a second, which is more than a dismounted squadron can fire in the same time. Comparative trials were made between the fire of the "Rekylgewaer" and a Hotchkiss machine gun during the cavalry maneuvers in Jutland last year. Both weapons opened fire in twenty seconds. The machine gun, however, offered a larger target than the "Rekylgewaer" and was not able to maneuver so freely in the thick undergrowth. The new weapon was superior in accuracy. In firing on targets representing a column and a line of skirmishers the Hotchkiss machine gun fired 864 shots and obtained 96 hits, or 11 per cent; whilst the "Rekylgewaer" fired 540 shots and obtained 95 hits, or a percentage of 16.—*United Service Magazine.*

EXPERIMENTS WITH UNIFORMS.

Almost all armies are now experimenting to find the most comfortable and least visible kind of uniform. The German paper Der Tag gives the following information with regard to experiments made in the Danish army.

First of all, it was a question of substituting a loose blouse for the present tunic; therefore men wearing various kinds of apparel were put through marches. The experiments turned out greatly in favor of the blouse; the men wearing it suffered the heat and cold much less. In fact, owing to its looseness, the blouse is less warm in summer and in winter allows the men to wear under it some other garment which makes it possible for them to dispense with the cloak in spite of the cold.

The most practical head covering was proved to be a "kepy," like that worn by the Austrian soldiers, of gray waterproof cloth, with numerous ventilators and a cork ring to allow the passage of air.

The shoes will be substituted by boots. All the leather objects are made of natural leather and all glittering objects of the equipment were done away with.

Besides, several experiments for the colors to be adopted both by day and by night and in various conditions of light were made. Naturally it was not always the same color which was best in all cases. The average results of the experiments allowed colors to be classified as follows: (1) Gray blouse; (2) dark-gray cloak; (3) light-blue cloak; (4) dark blue (old color of the Danish uniform); (5) light-green blouse; (6) dark-green blouse.

The best color seems to have been a medium gray, slightly dotted with green.—*Esercito Italiano.*

ENGLAND.

WAR OFFICE REORGANIZATION.

With the publication on January 6 of the special order of the British war office reorganizing the military commands and staff in the United Kingdom, practically all the changes recommended by the war office reconstitution committee have been initiated. That committee made its report about a year ago, and the following were its leading recommendations:

That a defense committee should be appointed, whose duty it would be to "obtain and collate for the use of the cabinet all the information and the expert advice required for the shaping of national policy in war and for determining the necessary preparations in peace."

That the office of commander in chief be abolished.

That an army council consisting of 7 members (4 military and 3 civil) be appointed to administer the affairs of the war office.

That an inspector-general of the forces be appointed, who would report to the army council the practical results of the policy of the council.

That administration be separated from executive command, and that the principle of decentralization be carried as far as possible, and that for the accomplishment of this object the army-corps system be done away with and that the United Kingdom be divided into "commands," each command including one or more "administrative districts."

The special order above referred to divides the United Kingdom, exclusive of the London district, into 7 commands, as follows:

The Aldershot command (the army corps), headquarters, Aldershot.

The Southern command, headquarters, Tidworth.

The Eastern command, headquarters, London.

The Irish command, headquarters, Dublin.

The Scottish command, headquarters, Edinburgh.
The Northern command, headquarters, York.
The Welsh and Midland command, headquarters, Chester.

Paragraphs 2, 3, and 4 of this order read as follows:

"2. In each command there will be a general officer commanding in chief who will be responsible for the training, efficiency, and discipline of the troops, and for the administration of the command.

"3. For the purpose of organization for war, training and instruction of troops, education of officers, execution of schemes for maneuvers, field operations, etc., the general officer commanding in chief will be assisted by officers of the general staff.

"4. To the staff of the general officer commanding in chief there will be appointed an officer, to be styled major-general (or brigadier), in charge of administration, who will be intrusted with the administrative services of the command. This officer will exercise his authority by order of the general officer commanding in chief, and the latter will delegate to him such extended powers as will enable him to deal with all administrative matters which do not involve questions of principle or policy; and upon all such matters he is authorized to correspond with the war office direct."—*M. I. D., 1174–e.*

COMMANDS AND ADMINISTRATIVE DISTRICTS.

The army corps system has disappeared and "commands" have been organized in their stead, thus partially carrying out the recommendations of Section II, Part II, of the report of the reorganization committee. The eight administrative districts considered in that section of the report have not been organized, presumably for financial reasons. It was through the instrumentality of the major-generals commanding these administrative districts that the reorganization committee proposed to decentralize the war office and at the same time relieve the general officers commanding in chief of much administrative routine, so that their entire time could be devoted to the training and preparation of the forces for war.

An attempt is being made in the Aldershot command (formerly the First Army Corps) to accomplish something in this direction by dividing the staff of the command into two divisions, the "general staff" and "administrative staff."

The general staff will work immediately under the lieutenant-general commanding, and will consist of Col: R. C. B. Lawrence as colonel of the general staff, and Bvt. Lieut. Col. D. Henderson, D. S. O. Among the subjects which will be dealt with by them will be: Intelligence, the instruction and training of troops, the preparation of schemes, and the allocation of funds for maneuvers.

The administrative staff will be under Brig. Gen. E. M. S. Crabbe, C. B., and will consist of Bvt. Lieut. Col. J. R. F. Sladen, D. A. A. G.; Col. W. F. H. S. Kincaird, A. Q. G.; Bvt. Lieut. Col. R. A. K. Montgomery, D. S. O., D. A. Q. G. Col. J. C. Oughterson, director of supplies and transport; Col. T. Heron, chief ordnance officer, and Lieut. Col. C. Rutherford, C. M. G., principal veterinary officer.

The subjects which will be dealt with by this staff include organization, mobilization, recruiting, discharges, discipline, interior economy, movement of troops by rail, remounts, and those duties which are generally dealt with by the director of supplies, the principal medical officer, and the chief ordnance officer.—*M. I. D. 1174–a.*

INSPECTOR-GENERAL OF THE FORCES.

Army Orders 168, of October, 1904, gives the duties of inspectors under the inspector-general of the forces. The general instructions to inspectors are as follows:

"The inspectors are the subordinates of and will report to the inspector-general of the forces. They will confine their inspections and reports to the efficiency and training for war of the arms to which they are appointed.

"They will, by frequent inspection and report throughout the United Kingdom and those portions of the Empire where troops under control of the home Government are stationed, insure that the methods of training make for uniformity.

"They will satisfy themselves that the provisions of the training manuals are adhered to and will point out any deficiencies, errors, or omissions which their practical application may bring to light.

"To enable the inspector-general to keep the army council aware of the practical results of its policy, the principal duty of the inspectors will be to closely watch and form an opinion on the efficiency of officers, men, and horses, the class of recruits, both as regards physique and character, noting any locality from which recruits of an inferior grade come, the quality of remounts, the handling of troops, the standard and system of training, the suitability and completeness of equipment, the mobilization arrangements, and generally all that affects the readiness of the forces for war. They will take note of and encourage suggestions for improvement of training, equipment, and efficiency, and will bring to the notice of the inspector-general any that may be considered worthy of the attention of the army council. Their field of inspection will cover the United Kingdom and those portions of the Empire where troops under the control of the home Government are stationed."

This order also gives the special instructions for the inspectors of cavalry, royal horse, and royal field artillery, royal garrison artillery, royal engineers, and the inspector of equipment and ordnance stores.—*M. I. D. 1174–a.*

COMMISSIONS IN THE REGULARS FOR OFFICERS OF THE MILITIA AND YEOMANRY.

The new regulations under which these commissions would be granted were published in June, and an examination of candidates was held in September. To enable an officer to compete he must be between the ages of 20 and 25, and must be recommended by his commanding officer. He is examined in—

Military history and strategy.
Tactics.
Military engineering.
Military topography.
Military law.
Military administration and organization.

The examination is competitive, and in addition to obtaining a sufficiently high place in the order of merit a candidate is required to obtain the qualifying minimum of 0.4 of the marks in each subject and 0.6 of the aggregate.

One hundred commissions were to be given at this examination, provided that number of candidates reached the required standard. Two hundred and twenty competed, and out of this number only 35 came up to the requirements, but on a reconsideration of the examination papers 20 more were allowed to qualify.

TERMS OF SERVICE.

On October 20, 1904, a special order was issued, making the terms of service of the infantry of the line as follows:

1. All enlistments will, until further orders, be for a period of 9 years with the colors and 3 years in the reserve.
2. Service pay and the allowances for messing and upkeep of kit, etc., will be issued under existing regulations.
3. The term of service for boys will remain 12 years, as at present.

There were not enough men enlisting for the long-term service to meet the drafts for foreign service, where only long-termed men are sent, and in the hope of remedying this difficulty the short (3 years) enlistment was abolished. Contrary to general expectation, a good many men are now enlisting for the 9 years' term.

The men within and without the army who are in favor of instituting universal service would have been satisfied if men had not come forward to enlist, as their failure to do so would have impressed upon the country the necessity of universal service. But if men continue to enlist in such numbers as they have since this order was published, there will be enough men to meet the foreign-service drafts, and the advocates of conscription must await a more favorable opportunity.—*M. I. D. 1174–a.*

SHORTAGE OF OFFICERS FOR THE MILITIA.

The militia establishment, as laid down in army orders, is 3,432 officers and 123,510 of other ranks, exclusive of the permanent staff. A year ago 667 commissioned officers were wanted to complete the establishment, and now 916 are needed. There is a considerable uncertainty as to the future of the militia, and it is not probable that many of these vacancies will be filled until the war office has adopted a definite policy in regard to this branch of the service.—*M. I. D., 1174–a.*

PROPOSED ARMY JOURNAL.

The military publication to be known as "The Army Journal of the British Empire," which was provided for in Army Orders 90, series 1904, will not be produced. It was found that the cost of publication would be more than was at first supposed, and, as there were not sufficient funds available, the idea of publishing such a journal was abandoned.

Many officers believed that it would prove a mistake for the war office to attempt the publication of an official journal of this character and were pleased when the announcement was made that it would not appear. Some species of arrangement has been made by the war office with the United Service Instituion for publishing in the journal of that institution such of its information as the war office may wish to have reach the army and the public generally.—*M. I. D., 1174–e.*

THE NEW RIFLE.

The general belief that a short rifle must necessarily be much less accurate than a long rifle has set the inventors to work to devise a rifle that will have a long barrel and at the same time will be a comparatively short weapon. To do this the mechanism is brought farther back into the stock. At least two such rifles have been exhibited here, but they possess no new principle.—*M. I. D. 1174–e.*

REPORT ON TRIAL OF THE SHORT RIFLE BY THE ARMY AND NAVY.

For purposes of trial 1,050 rifles were made and issued to three cavalry regiments, seven infantry battalions, the royal navy, and the royal marines. The tests extended over 3 months, and reports were made upon the accuracy, rapidity of loading by charger, shooting, advantages of a long hand guard, and handiness of the rifle; also as to the desirability of an adjustable fore sight hooded or unhooded, whether it should be a bead or a barleycorn, and whether the lever type of back sight was preferred to the "H" pattern on long rifle. The question of a wind gauge; the general working of the bolt mechanism, including the ease or otherwise with which it could be assembled or stripped; the improved safety catch and drag pull-off, and the recoil, as compared with that of long rifle, were also considered. The influence of the shortening of the rifle by 5 inches on the use of the bayonet also received attention.

The reports showed that the accuracy of the rifle was satisfactory and that the new weapon was superior to the service rifle in handiness, rapidity of loading, and firing. But, as the navy considered that a cut-off was necessary, this (with a piling swivel subsequently asked for) is fitted to all naval rifles. From the reports received the small-arms committee recommended the rifle as suitable for universal use. They were of opinion that the barleycorn should be adhered to, pending further trials with the other patterns of fore sight, and that the sight should be adjustable, with open-topped hood. The lever type of back sight without wind gauge was recommended (a more satisfactory type of wind gauge has now been devised and has since been adopted), and a long hand guard was to be fitted. The charger system of loading was also recommended, the 10-round magazine being retained, but with small modifications to facilitate loading and clearing the magazine of sand, etc. The mechanism was considered satisfactory, and the committee concurred in the omission of the cut-off, but were of opinion that the mechanism should be capable of taking it should experience show it to be necessary; they were also agreed as to the drag pull-off recommended. They considered the slight increase in the recoil to be unimportant, and they advised that the bayonet should be of same length as that for the long rifle.

A rifle, as recommended by the committee, was then made and approved, and arms are now being manufactured of this pattern with a wind gauge.

Further tests of this rifle, chiefly for its behavior in sandy, dry climates were made in Somaliland, 100 of these weapons, which were first tried at home, being sent out for this purpose. The arms stood the test well; the men were reported to like the rifle and to shoot well with it, the increase of recoil being imperceptible; the lightness and convenience in handling gave universal satisfaction; the complete casing of the gun in wood was fully appreciated.

Trials were also conducted at Hythe to compare the value of charger loading and single loading from bandolier; these gave most satisfactory results in favor of the former, and tests of accuracy of sighting at long ranges were also carried out.

Trials have been made at Hythe to test the accuracy of the short rifle in comparison with the long service rifle and several foreign military rifles. The following are the results:

Country.	Figure of merit.[a]			
	200 yards.	500 yards.	1,000 yards.	1,500 yards.
France	0.33	0.58	1.29	3.42
Germany	.35	.77	1.52	4.02
Italy	.27	.73	2.04	3.04
Great Britain:				
(*a*) Long rifle	.27	.62	1.72	4.43
(*b*) Short rifle	.21	.71	1.21	2.99

[a] The "figure of merit" represents the average deviation of the bullet from the center of a group of shots. The lower the figure of merit, therefore, the greater the accuracy of the rifle.

—*Journal of the Royal United Service Institution.*

NEW EXERCISE REGULATIONS FOR THE ENGLISH CAVALRY.

We attempted in a recent article to give an accurate idea of the fundamental principles on which the new temporary regulations for the English cavalry are founded, and which were compiled under the personal direction of Lord Roberts, who dictated the preface himself.

The carbine, according to Lord Roberts, is the cavalry's principal weapon; consequently fighting on foot would be the normal way for cavalry to fight.

The regulations are divided in six parts and two appendixes.

First part: Individual instruction on foot.

Second part: Equitation.

Third part: Exercises and evolutions on horseback.

Fourth part: Tactical principles and exploration services.

Fifth part: Various operations.

Sixth part: Honors and parades.

First appendix: Gymnastic exercises.

Second appendix: Firing.

We have principally to deal with the first and fourth parts; with the former because it contains the method to be followed to form a capable foot combatant; the latter because it minutely analyzes the use of the fighting arm and its main task during exploration.

As to the other parts of the regulations we may say at once that they present no special features. The exercises and evolutions of squadrons, regiments, brigades, and divisions are more or less the same as ours, which are already extremely simple in formations and movements, and the same may be said with regard to the equitation. The only point to be noted is that, both for the preparation of the horse—to make it into a truly military horse—and in what concerns the exercises and evolutions, work in the open country is as far as possible recommended. The limit of time in which the training of the horse and instruction of the troops is to be carried out is also accurately stated.

In conclusion, such parts as deal with horsemanship, exercises, and evolutions do not differ very materially from the rules in force for other cavalries, for the intention to make good horsemen is therein very clear. And this is perfectly in keeping with the ideas expressed by Lord Roberts and which we have already mentioned.

The first part, instead, takes us into an entirely new world, as far as regards cavalry exercises. One must, nevertheless, recognize and appreciate the merits of the compilers of the regulations who do not limit themselves, as is often the case, to point out what ought to be done, but also suggest the way to do it. The statement has been made that the cavalry's principal weapon is the carbine, and this statement has been adhered to.

Therefore, this first part has been calculated to form, from the very first days that the recruit is under arms, an able carbine fighter, and with this object it goes into such minute particulars that it might almost be taken for a treatise on the training of the infantry.

Naturally all this impresses—and not favorably—the cavalry officer who undertakes to study English regulations; but in spite of this he can not but admit that the system preached is certainly practical and can not fail to bear good fruit.

For what is the purpose of these rules? To impress upon the recruit's mind, from the very day he dons his uniform, the importance of the firearm he holds and of the fighting on foot. As soon as the recruit has mastered the mechanism of his carbine and can handle it properly he is immediately and carefully taught the principles of firing, "because it will be from the first successes obtained in the first target practice that an interest in shooting will develop; and this interest will last for all the time of the soldier's service." So it happens in this individual instruction—which is as a rule imparted from November to January—that skirmishing instruction is at once proceeded with, and this is divided into two parts: (1) Preliminary instruction on level ground; (2) practical application of the principles taught, to tactical problems. And it is here that, appropos of these instructions, those very detailed rules and regulations which have been already mentioned are dealt with.

In our first article we frankly expressed our opinion on the subject of Lord Roberts's pretension of making the cavalryman as good a dismounted fighter as an infantryman himself, without, at the same time, injuring in any way the cavalry spirit. We will not here repeat our opinion on the necessity of modern cavalry having to fight with fire. We will not deny—in fact will admit—that the English regulations, as far as fighting on foot is concerned, are far superior to any in force for other European cavalries, and therefore deserve careful examination. We will never agree, however, on the purpose to which they aim—that of making the cavalryman consider the carbine as his principal weapon.

On the other hand, a careful consideration of the matter shows a veritable contradiction. Three months—from February to April—are dedicated to theoretical and practical platoon instruction; two months—May and June—to squadron instruction; about two months—June and July—to regimental evolutions; the same number of months—from July to September—for brigade evolutions, leaving September and October for maneuvers. This division of instruction shows very clearly that mounted exercises and evolutions are taken much more notice of than fighting on foot. Even admitting that these exercises and evolutions include the dismounting of the various units, the fact remains that a greater part of the year is dedicated to riding instruction. Therefore, in our opinion, giving such accurate exercise and evolution instruction is in direct contradistinction with the fundamental principle already mentioned that cavalry must principally fight on foot.

This principle would logically lead to forming a mounted infantry. The English regulations, instead, want to make of the horseman a good fighter both on foot and mounted, and this, we are quite sure, is absolutely impossible.—*Italia Militaire e Marina.*

NEW ARMAMENT FOR FIELD AND HORSE ARTILLERY.

The new quick-firing guns for field and horse artillery and the new rifles, are not being manufactured as rapidly as was anticipated when they were first adopted, especially the gun for the field artillery.

There appear to be three reasons for this:

1. This is an 18½-pounder, and the committee that adopted it were not unanimous in favor of it, a minority insisting that the gun and the projectile were both too heavy. This caused some hesitation about giving the order for the construction of the guns.

2. Having waited so long before beginning this much needed re-arming, many officers were in favor of waiting a little longer in order to get the benefit of the experience in

the Russo-Japanese war. This perhaps caused some hesitation.

3. The actual revenues for this year are falling short of the estimated revenues and, consequently, Parliament can not be expected to grant a large military budget for the coming fiscal year. The first guns that are turned out are to go to India to re-arm the field artillery there, and are to be paid for out of Indian revenues; but if their manufacture is pushed rapidly the Indian order will be filled before the authorities will have funds sufficient to warrant them in giving the order for the manufacture of the guns for the home artillery. This doubtless caused some hesitation.

However, an order for some of these guns was finally given, and they are now being manufactured in the Government and private plants, and the work has proceeded so far that the Government is now committed to this type of gun, whether it is the best or not. Under the circumstances no definite statement can be made as to the time when the Home Artillery will be equipped with this gun.—*M. I. D. 1174-a.*

REARMAMENT OF THE FIELD ARTILLERY.

It is understood that the first order for the new guns was given on May 5, 1904, immediately after the report of the experimental committee was received; that 21 batteries with their wagons are ready, and that 15 more batteries will be added by July next; lastly, that by March 31, 1907, 161 batteries, or 966 guns, with wagons and ammunition complete, will be provided, leaving only 14 batteries for the reserve to be supplied the following year, independently of 8 batteries which will be manufactured in India—*The London Times.*

NEW FIELD AND HORSE ARTILLERY GUNS.

These guns are still considered to be in the experimental stage, and some of the following particulars as to weights, etc., may be amended. The horse-artillery gun is to be known as the 13-pounder, although the projectile weighs 12½ pounds, and the field-artillery gun is known as the 18-pounder, although the projectile weighs 18½ pounds.

Particulars.	13-pounder.	18-pounder.
Muzzle velocity	1,658 foot-seconds.	1,610 foot-seconds.
Caliber	3 inches	3.3 inches.
Weight	672 pounds	1,008 pounds.
Breech mechanism	Swinging block	Swinging block.
Rifling:		
Grooves number	18	18.
Twist	Uniform	Uniform.
Firing mechanism	Percussion	Percussion.
Approximate weight of gun and carriage	2,028 pounds	2,663 pounds.
Approximate weight of carriage limber	1,344 pounds	1,655 pounds.
Approximate weight behind traces	3,372 pounds	4,318 pounds.
Number of rounds in carriage limber	24	24.
Approximate weight of wagon (filled)	1,729 pounds	2,170 pounds.
Approximate weight of wagon limber (filled)	1,623 pounds	2,060 pounds.
Approximate weight behind traces	3,352 pounds	4,230 pounds.
Number of rounds in wagon limber	38	38.
Number of rounds in wagon	38	38.
Height to axis of gun from ground	3 feet 0.86 inch	3 feet 0.86 inch.
Wheels:		
Track	5 feet 2 inches	5 feet 2 inches.
Height	4 feet 8 inches	4 feet 8 inches.
Weight of projectile (filled and fused)	12½ pounds	18½ pounds.
Ammunition	Fixed and fitted with percussion primer.	Fixed and fitted with percussion primer.

—*M. I. D. 1174–c.*

TEST OF AUTOMATIC RIFLES.

The unsatisfactory results of the tests of automatic rifles at Bisley last summer has increased the interest in the new Rexer automatic machine gun, which weighs only 17½ pounds, including the iron rest from which it is fired. It has been subjected to a thorough test at the School of Musketry at Hythe.—*M. I. D. 1174–a.*

SURVEYS.

The disadvantages that officers experienced in the South African war, owing to the absence of reliable maps, impressed upon the people of Great Britain and the colonies the necessity for instituting surveys throughout the British Empire. As maps that are good enough for military purposes will satisfy the wants of those who are interested in the sale of lands in the colonies and their development generally, the colonies were urged to make liberal appropriations for this work. As the British Empire consists of about 11,000,000 square miles of territory, and as it will cost about $10 per square mile to make a survey that will satisfy the military and civil requirements, it is not expected that all this territory will be surveyed in the near future. The home Government is mainly interested in establishing a uniform system of survey throughout the Empire, and in getting the work outlined so that those districts that are most apt to be theaters of military operations, and those districts that are being rapidly developed, will be the first surveyed.—*M. I. D. 1174-a.*

MECHANICAL TRACTION.

An official war office trial of the Diplock Pedrail tractor took place on the 8th instant at Aldershot, among the officers present being Capt. R. K. Bagnall-Wild, secretary of the mechanical transport committee at the war office; Col. J. C. Oughterson, director of supplies and transport; Col. F. W. B. Landon, C. B., commanding army service corps, and Col. J. L. B. Templer, superintendent balloon factory. A piece of heavy ground near Claycart Bottom was chosen for the trials, and a number of ordinary steam sappers were pitted against the new tractor, which drew a load weighing about 5 tons through a gully and up a steep sandy hill. The pedal extremities of the driving wheels seemed well adapted to the loose surface and made the journey with ease, while most of the other machines failed to accomplish it. The trials, therefore, may be considered satisfactory when compared with other engines of about the same motive power.—*The Broad Arrow.*

MANEUVERS 1904.

The main interest in this year's maneuvers was centered in the combined operations of the army and navy, and especially in the disembarkation and the reembarkation at Clacton.

Whenever the British soldier is sent against an enemy of Britain, it is the duty of the sailor to carry him across the sea and to land him on the hostile shore above high-water mark. To do this economically and efficiently it is necessary that the two services shall be trained to work harmoniously together. As this fact has been evident to Englishmen for some generations, and as they have had more experience than other people in working out the problems involved in combined operations, it was expected that everything would be done in a most workman-like manner. This expectation and the increasing desire for knowledge concerning these matters on the part of those nations that have recently added to their foreign possessions, and have enlarged their navies, caused some of the foreign observers to give almost too much prominence to the disembarkation and reembarkation, and to look upon the land operations as having no other purpose than to heighten the value of these undertakings by producing conditions similar to those that might arise in actual war.

The respective responsibilities of the British army and navy when engaged in combined operations are as follows:

RESPONSIBILITY OF THE NAVY.

In combined naval and military operations the navy provide:

(*a*) The necessary transport for the force.

(*b*) Protection for the force while at sea.

(*c*) Food for the troops while at sea, unless special arrangements are made to the contrary.

(*d*) The means of putting the force on shore.

(*e*) Protection during the disembarkation against interference from the enemy's fleet.

Once afloat the arrangements are all in the hands of the senior naval officer, but he should work in close conjunction with the senior military officer, who will inform him of the sequence in which he wishes the troops to be disembarked. Once disembarked the troops again come under military command.

The navy should be prepared to cover the landing with the fire of its ships, and should, therefore, take up positions as near the shore as is consistent with their safety.

RESPONSIBILITY OF THE ARMY.

It is the duty of the military authorities:

(1) To fully state their requirements, and to specify the sequence in which they wish the embarkation to be carried

out, notifying the date and hour of arrival of the troops at the places selected by the naval authorities.

(2) To keep the Admiralty informed of all arrangements that have already been made, and of all changes in the numbers or composition of the force.

(3) To deliver men, horses, guns, transport, stores, etc., at the port of embarkation when the Admiralty has notified that the transports are ready to receive them.

(4) To take care that the sequence of dispatch corresponds with the sequence of requirements on shore.

(5) To keep units and their regimental transports, as far as possible, together.

(6) To see that a responsible officer of the department concerned travels on each ship which conveys stores, so that he can superintend the disembarkation and custody of the stores on shore.

The embarkation at Southampton was carried on under war office, not naval, orders. The exact composition of the force to be transported was known long beforehand, and each of the 10 transports had been specially prepared for carrying the units assigned to it, and as all these transports could be berthed alongside the pier, and as an embarkation staff of experienced officers and noncommissioned officers had been sent to Southampton to superintend the embarkation, the presumption is that there was no hitch in this part of the programme.

The first real test of the completeness of the preparations came when the disembarkation began at Clacton. The expedition of the blue force was intended to show what measures should be taken in order to carry out successfully a sudden and unexpected attack on a hostile coast at a point where there is no harbor. It may be assumed that the intelligence department of the army and navy would have considerable information concerning that portion of the coast where the landing was to be made, but it would necessarily be incomplete and it would need to be supplemented by reconnoissance.

But all of the precautions that should have been taken under the circumstances were not taken. The first parties to come ashore were the beach parties from the navy, but they came unarmed and without escort, just as they would have done had the coast been a friendly one. As soon as these parties had prepared landing stages, troops were dispatched from the various ships, but in leaving the ships and approaching the shore there was no concert of action. As soon as the boats of any ship were filled with men a tug picked them up and started to tow them ashore without waiting until the detachments from the other ships were ready; moreover, there was no pulling parties of sailors in some of the boats containing soldiers, and had one of these detachments, proceeding in this independent way, been attacked from shore the detachments from the other ships could not have supported it properly, and its own boats could not have formed line and approached the shore under control of experienced oarsmen.

The horses first brought ashore should have had their equipments on them, but they did not have, although some that were landed later in the day did have.

Instructions had been given that in loading the transports, units should not be separated from their horses and transport, and that things required first upon landing should be put on last and landed first. These instructions were carried out in the main, but it was noticed that some of the typewriting machines came ashore in the first boats.

Material for the construction of landing stages had been prepared beforehand, and, as a result, the stages were made ready in a very short time. They were of various designs, much latitude having been given the young officers who had been charged with the preparation of the material. Rafts, gun carriages, etc., were utilized for this purpose.

The navy furnished heavy details to assist the crews of the transports to work the winches, etc., and for the beaching parties, but it is doubtful if they could have spared so many men had the landing been opposed. Some of these parties were in charge of mere boys, but they were used to responsibility and to the exercise of authority, and under their direction the work proceeded in a businesslike manner. There may have been many shortcomings, but there were not many that were patent to us landsmen, especially as we were not permitted to go aboard the transports and could only observe the shore end of the undertaking.

There were 54 horse boats utilized, and each of these could carry 10 horses or 2 field guns and limbers or two 4-wheel vehicles, but these did not prove to be sufficient for a rapid disembarkation. In loading these with horses the process was as follows:

Three men entered the boat first: then the 10 horses, with the kits for men and horses, were lowered into the boat, followed by the remaining 7 men.

To load a horse boat required, on an average, during daytime about 25 minutes and at night only a little more.

Scene at landing.

Each derrick could handle about 6 vehicles per hour, so it required a little less time to load a boat with wagons than with horses.

The pontoons were lashed to their wagons and lowered over the ship's side and then towed ashore. In order to get these pontoon wagons, the field guns, and the heavier vehicles ashore, strong details were required to man the drag ropes, and for this purpose the naval details were supplemented by details from the army.

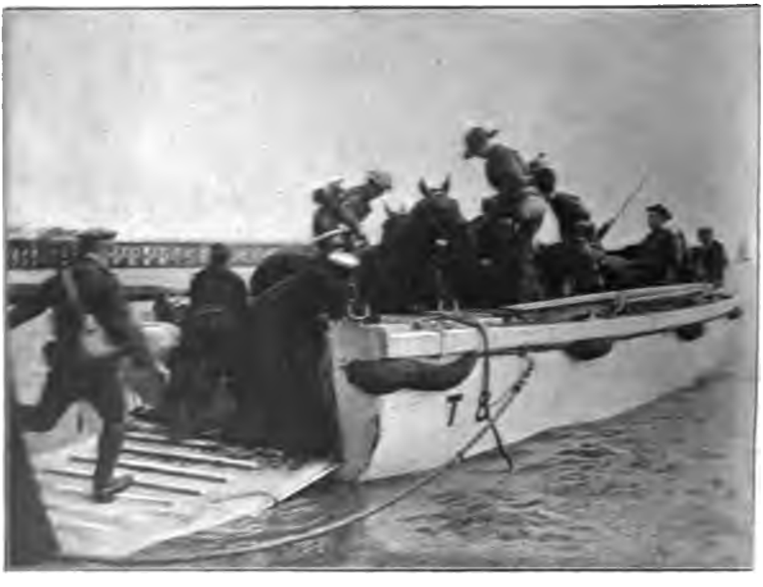
A schedule had been arranged showing the number of men, horses, guns, and vehicles to be landed each hour from each ship, also indicating the units from which they should be drawn and the character of boat, whether horse or rowboat, that would be used to transport them. It was not expected that this schedule could be carried out to the letter, but it would serve as a guide and was to be followed as closely as possible. According to this programme, the disembarkation should have been completed in 17 hours, but it required 27 hours and was not then complete, as some wagons were left on the ships owing to the sea becoming too rough for them to be landed. It could not be done in schedule time for a number of reasons:

Landing stage.

It took more than the calculated time for the steam launch to make the round trip from the ship to the shore and back owing to the amount of time required both at the ship and shore end of the line to assemble the boats and to get under way.

There were 24 steam launches, but they were not worked to advantage. They, as well as the other boats, were assigned to particular ships, and they often lay idle at the ship's side waiting for the boats which they were serving to be loaded, while at the neighboring ship loaded boats lay waiting to be towed ashore. Had there been some central directing authority on the fleet to whom the movements of these boats had been reported, he could have assigned them to duty where they were most needed and a considerable saving of time would have resulted.

A military landing staff on shore to serve as a medium of communication between the beach masters and the military authorities and to relieve the marine officers of the duty of directing the troops on landing to their places of assembly would have been an improvement.



The horse boat.

The fleet was organized into two divisions and there were two divisions of troops, but the first division of the fleet did not carry the first division of troops, and some misunderstanding arose between the army and navy over these terms.

Before the disembarkation was completed the sea had become pretty rough, and this and other circumstances caused some damage: One horse had his leg broken, 2 loaded wagons were sunk, and 18 of the horse boats were damaged to such an extent that they could not be used at the reembarkation. Notwithstanding this shortage of boats it was estimated that the entire command, less the tents and the wagons that carried them, could have been reembarked in 48 hours.

These tents and wagons are left out of the calculations because on service conditions they would certainly have been abandoned. Some of the mounted troops returned to their stations overland.

As above stated, the reembarkation was carried out under peace conditions.

The horse boat loaded with stores.

One fact, a very important fact, was very prominent throughout the operations, and that was that a spirit of mutual good will existed between the members of the two services.

It was the duty of the sailor to land the soldier above high-water mark, but the soldier did not for that reason become a mere helpless onlooker. In fact, he vied with the sailor, and with no little success (especially during the reembarkation), in doing those things that are the special function of the seafaring man. Each man was anxious to play the part of the "handy man." The sailor man, who had spent most of his life at sea tried to convince his solider friend that the thing he understood better than all other things was how to handle a horse, and on the other hand one might have concluded from the suggestions which the soldier gave the sailors that the only men who thoroughly understood the mysterious influence of winds and tides on things afloat were the men from Aldershot.

UMPIRES.

There were about 42 umpires with the 18,000 troops engaged, and they were selected men. Their duties were very comprehensive, for they represented all that lies between the unrealities of peace maneuvers and the realities of war. Not only did they render decisions as between the contending forces, but they reported upon the service of protection, the method of occupying camps, bivouacs, cantonments, and all administrative arrangements connected therewith. Confidential reports were made to the chief of the general staff by the chief umpire and the senior umpires as to the way in which their subordinates performed these important duties.

In the "Notes for the guidance of umpires" it is stated that "umpires should place themselves between units rather than with them, and that they should ascertain at all stages of the fight not only what the dispositions are in the case of the force to which they were attached, but also what the enemy is intending to do.

"They should be ready to afford both forces such assistance and information as would be derived in war from the flight of bullets and projectiles; thus a commander should be informed that he is being fired at from a certain direction. which fact he might be unaware of merely because he heard shots in that neighborhood."

Troops were seldom ruled out of action, but were frequently checked in their advance for a time by the decision of the umpire or were ordered to retire for a certain distance. The umpires of opposing forces frequently conferred with each other, and consequently the decisions rendered were made with a full knowledge of the situation. In the absence of umpires the officers of opposing forces met and usually had little difficulty in reaching an agreement such as the umpires would have reached had they been present.

THE SOLDIER AND HIS EQUIPMENT.

The enlisted man did his part well. All the noncommissioned officers and many of the privates had several years' service to their credit, and this maneuver business was no new thing to them, nor did it seem to be to the many very young men in the ranks. There was no shouting of orders; each member of a group took his cue from the group leader and, as a rule, carried out his spoken order or signal quickly and intelligently. In the presence of the enemy, whether advancing or retreating, he made the best possible use of cover, and in this and many other ways gave evidence of careful training and much experience in field work.

On the firing line.

His uniform and equipment are fully indicated in the Instruction for Fitting and Wearing the Equipment Bandolier, Pattern 1903, just published. In designing the uniform and equipment, comfort, invisibility, and freedom from noise were considered the main requisites. These have been considered advisable characteristics of the soldier's uniform and equipment for many years in all armies, and it is very remarkable that in some armies the soldier is still decorated with bits of bright metal that serve as reflectors to point him out to his enemy, and that his equipment is so adjusted that he can not march without making a great noise.

THE COMMISSARIAT.

For reasons of economy the navy did not provide food for the troops at sea, but they did provide water and the means of boiling it.

The following daily rations were supplied free to officers and men while aboard ship:

Biscuit	pound	1
Preserved meat (nominal)	do	1
Tea	ounce	¼
Sugar	ounces	1½
Condensed milk, sweetened (1 tin for 25 men)	pound	1
Cheese	ounces	3
Lunch biscuits	do	4
Jam	do	4

The forage allowance was as follows:

Oats (less bran issued)	pounds	10
Hay	do	10

If required, 2 pounds of compressed bran may be drawn in lieu of a similar quantity of oats.

The scale of rations for men and horses during the operations in Essex was as follows:

Bread or biscuit	pound	1
Meat, fresh or preserved	do	¾
Bacon	do	¼

GROCERY RATIONS.

Tea	ounce	⅙
Coffee	do	⅓
Sugar	ounces	1½
Sweetened milk (1 tin per 25 men)	pound	1
Salt	ounce	½
Potatoes	ounces	8
Cheese	do	3
Biscuits (lunch ration)	do	4
Wood	pounds	2
Light (for each authorized lantern)	candle	1

FORAGE.

Oats	pounds	12
Hay	do	12

A stoppage of 3d. per day was made against each enlisted man for the grocery ration which, during the maneuver period, was supplied by Government. Ordinarily the Government does not supply this element of the ration, but allows the soldier 3d. per day to procure it from the canteen or elsewhere. It cost the Government more than 3d., but the excess was charged against maneuver fund.

Field bakeries, operated by bakers belonging to the Army Service Corps companies at Aldershot, furnished considerable fresh bread to the troops.

Arrangements were made with contractors to sell beer in cask at a rate not exceeding 1 quart per man per day, to commanding officers, who issued it under strictly controlled regimental arrangements. No beer was sold to individual soldiers or to civilians.

Depots of supply were established at different points in the maneuver area. These depots were neutral, and both red and blue troops drew from them. The supply columns while on the way to the depot for supplies and while returning to their units were neutral. This was not quite like war, but it was necessary for economic reasons.

MEANS OF COMMUNICATION WITH ARMY HEADQUARTERS.

Balloons.—Both the red and blue forces had the services of a balloon section, but it is believed that neither derived much benefit from the balloons.

Telegraph lines.—There were two kinds of military telegraph lines:

(*a*) The air line, which was used by the commanders of forces for communicating with the umpire in chief and director of maneuvers, for intercommunication between detached portions of a force, and also in connection with the supply of troops. The air line was also used to connect each camp with the post-office telegraph lines, the army furnishing the operator for the post-office end of this wire. All air lines were neutral.

(*b*) The ground cable line, which was not neutral.

Signalmen.—Each unit had its quota of signalmen, and constant communication was kept up between the different parts of the unit, and reports were sent in frequently to the commanders of higher units.

Motor cars and motor cycles.—There were 25 motor cars for conveying members of the directing and umpire staff and foreign attachés, and there were about 35 motor cyclists who were employed on messenger duty.

These were all drawn from the Volunteer Motor Corps, and they rendered excellent service. This corps consists of 160 men owning motor cars and 40 men owning motor cycles. Each member of the corps is liable to be called out for 10 days' duty during the year, and he must be on duty that number of days to get his efficiency rating. He is allowed 30s. a day and petrol for his car while on duty.

EXPERIMENTAL EQUIPMENT.

Among the experimental equipment tried during the maneuvers was the following:

Rubber tires, the method of fixing them to service wheels.

Brake and drag shoes for the same.

Three kinds of waterproof tents.

Various kinds of hopples and linking straps.

A cavalry bit.

Two patterns of stirrups.

Waterproof ground sheets.

Limbered wagon for first line transport.

In addition to the above, the various types of traction engines which were used should be considered as in an experimental stage; with the good roads existing in Essex there is no doubt that the use of these mechanically propelled vehicles was economical. Mechanical transport units have been organized as a part of the Army Service Corps, and considerable attention is being given to the development of this species of transport. The Government report on traction trials held at Aldershot in September and October, 1903, has been forwarded.

An incident that occurred at Southampton just previous to the embarcation of the Aldershot command added considerably to the interest in the question of securing animals while on service. About 600 horses belonging to the cavalry and artillery units were fastened by a short rope, one end of which was attached to the pastern of the foreleg and the other to a heavy picket pin. In the early hours of the morning one of these horses, which had been seriously injured, was shot, by order of the veterinarian, without being removed from the lines. The other horses, although accustomed to firing, became frightened, and within a few minutes nearly the entire 600 had drawn their picket pins and were running in all directions panic stricken. It was 10 days or more before all of them were recovered. Eight of them had to be killed on account of severe injuries and about 30 others were so badly injured that they are no longer fit for military service. It was necessary to send other troops to the maneuvers to replace these units. This mode of fastening had been found sufficient when on active service after the horses had become pretty well worn, but it evidently will not do so long as they are in such condition as they were at the time of this occurrence.—*M. I. D. 797.*

ENGLISH RADIOTELEGRAPHY.

According to orders given by the Admiralty, all the English men-of-war, with the exception of the admiral's ships, have given up their radiotelegraphic apparatus. It is believed in England that this step has been taken because as the war ships generally sail in groups it is sufficient to have one of the ships of each division provided with wireless telegraph apparatus.

This decision of the Admiralty has been greatly criticised; it has been observed that one or two ships might be separated from the rest in the accomplishment of a special task assigned them, or that the ships might have to travel separately in the night, or so many other emergencies might arise in which it would be well to have the ships in radiotelegraphic communication with one another.

All the cruisers will, however, keep their apparatus, and a special type is being experimented with for use on torpedo destroyers.

A few years ago an attempt at radiotelegraphic signaling was made on a torpedo destroyer, but the results, on account of the vibration and other causes characteristic of this style of boat, proved so unsatisfactory that the experiments were abandoned.

We now hear that Lieutenant Ryan, of the *Panther*, has been for the last year experimenting on board the torpedo destroyers under his command, with relays and receivers invented by him to counteract the effect of the vibrations and other disturbing causes coming from the boat. It is said that he has succeeded perfectly in receiving and transmitting communications even at a distance of 30 or 40 miles with an aerial wire fixed to the top of the mast of the destroyer and at twice the distance by means of a kite.

The Admiralty has granted a sum for the development of these experiments by placing the apparatus on other torpedo destroyers.

If the experiments give good results, the exploring capacity of the destroyers will be greatly increased, as the new apparatus will enable them to transmit information as the cruisers do now, and not compel them to consume their limited amount of coal by coming each time within signaling distance.—*Esercito Italiano.*

REORGANIZATION OF BRITISH FLEET.

The new scheme of organization of the British fleet has effectively illustrated the advantages attached to the policy of building in large classes. The French squadrons at sea, like those of Italy, Austria, and in some measure Russia and Japan, comprise heterogeneous collections of ships with few points of resemblance. British policy has been to work out periodically the best design of battle ship, cruiser, gunboat, or torpedo craft, and, after careful model experiments, to embody that design in from 6 to 9 ships. Of late battle ships have been built on the principle of a double squadron of 8 ships; consequently, in arranging the distribution of the fleets at sea, the British Admiralty has been able to place 8 ships of identical speed and ranges of action in the Atlantic fleet, 8 smaller and less powerful sister ships in the Mediterranean, and when the whole of the *King Edward VII* class of 16,350 tons have been passed into the Atlantic fleet (based on Gibraltar), Admiral Sir Arthur Wilson, the commander in chief of the Channel fleet (based on the home ports), will have under his control the 6 battle ships of the *Duncan* class, of 14,000 tons; the 2 ex-Chilian ships, *Swiftsure* and *Triumph*, resembling in character the *Duncan*, in being, like them, of high speed, and 4 of the 8 ships of the *Majestic* class. By the time the reorganization is complete the Admiralty will, therefore, have 8 *King Edward VII's* in the Atlantic fleet; 8 *Bulwarks*, of 15,000 tons, in the Mediterranean fleet, and 12 battle ships in the Channel fleet, embracing two squadrons with a trial speed of 19 knots or more, and one heavier squadron of 17 knots.

The same attempt to obtain homogeneity is being made with reference to the cruiser squadrons, of which one is attached to each three of these battle ship forces. In the case of the First and Second Cruiser Squadrons the idea has been to assign the *Good Hope* and the *Drake* for service as flagships to Rear-Admiral E. S. Poe and Prince Louis of Battenberg, the two rear-admirals commanding, and to make up the total of 6 cruisers in each case by assigning 5 " county " cruisers to each command. In the Mediterranean the cruiser squadron is still in a state of transition, and must await reorganization until the Admiralty have some new ships at their disposal. In the Far East 5 battle ships are serving, 4 of these consisting of vessels of the *Canopus* type, ships specially designed to pass with ease through the Suez Canal, and the total is completed by the *Centurion*, an older ship, which has lately been entirely reconstructed and provided with a more modern armament. The same principle of homogeneity has also been carried out in the organization of the fleet in commission in reserve.—*Cassier's Magazine.*

ENGLAND—INDIA.

THE INDIAN ARMY, 1904–5.

Sanctioned establishment of the army in India, 1904–5.

	European army.		Native army.				
			Europeans.		Natives.		
	Officers.	Warrant noncommissioned officers and men.	Commissioned officers.	Noncommissioned officers and men.	Commissioned officers.	Noncommissioned officers and men.	Total.
Artillery:[a]							
Officers	548	....	53	....	....	....	....
Noncommissioned officers, trumpeters, buglers, and others	....	1,075	....	....	33	....	....
Rank and file	....	13,043	....	....	....	7,010	....
	548	14,118	53	....	33	7,010	21,762
Cavalry:[b]							
Officers	261	....	497	....	....	....	....
Noncommissioned officers, etc	....	585	....	....	679	....	....
Rank and file	....	4,797	....	....	....	23,975	....
	261	5,382	497	....	679	23,975	30,794
Engineers, submarine mining, and sappers:[c]							
Officers	249	....	77	....	74	....	....
Rank and file	....	....	....	206	....	4,733	....
	249	....	77	206	74	4,733	5,339
Infantry:[d]							
Officers	1,508	....	1,683	....	2,135	....	....
Noncommissioned officers, etc	....	3,346	....	3	....	114,082	....
Rank and file	....	48,892	....	....	....	....	....
	1,508	52,238	1,683	3	2,135	114,082	171,649
Miscellaneous officers, etc.:							
Invalid and veteran establishments, etc	6	3	....	....	....	....	....
Officers of Indian army (late staff corps)	1,159	....	....	....	....	....	....
General officers unemployed	14	....	....	....	....	....	....
	1,179	3	....	....	....	....	1,182
Total	3,745	71,741	2,310	209	2,921	149,800	230,726

---

[a] The artillery is composed of 11 batteries Royal Horse Artillery, 5 ammunition columns Royal Horse Artillery, 44 batteries Royal Field Artillery, 8 ammunition columns Royal Field Artillery, 8 mountain batteries Royal Garrison Artillery, 26 companies Royal Garrison Artillery, 10 native mountain batteries, and 1 company Frontier Garrison Artillery (native).

[b] 9 regiments European, 42 regiments native.

[c] Includes 26 companies sappers and miners, 1 balloon section, 1 pontoon section, 1 mounted detachment, 4 telegraph sections, 2 printing sections, and 2 photolitho sections.

[d] 52 battalions European, 132 battalions native.

In our European force in India, mustering 74,657, we have 59,300 bayonets and sabers, while the splendid native army of India can muster 140,000 bayonets and sabers. We therefore have to calculate the number of field guns we have for this grand total of 340,000 bayonets and sabers of the British field army. At home and elsewhere than in India we can muster 738 field guns and howitzers. In India we have 336 field guns and howitzers, giving a total of 1,074 guns of our horse and field artillery. Consequently we have only 3⅛ field guns for every 1,000 bayonets and sabers, and not 4½, as Mr. Arnold-Forster states. Even if we add the guns of our 19 mountain batteries, including one in Egypt, and the guns of 6 heavy batteries at home and 6 in India, we only get 186 extra guns, or a grand total of 1,260 guns for our field army of 340,000 bayonets and sabers, which works out at 3⅔ guns per 1,000. It may be here noted that the German Parliament has recently voted funds for an increase of both field and heavy guns, since it is fully recognized from the experiences in the Far East that artillery can do something more than produce a moral effect, which as been the popular belief for many years. We see it reported from Tokyo that at the battle of Mukden the Russians had 300,800 bayonets and 26,700 sabers, with 1,368 guns, which gives over 4 guns of all natures per 1,000 bayonets and sabers.—*The Broad Arrow.*

The actual strength of the Indian army, as a rule, does not differ much from the establishment, and the above figures may be taken to represent the number of men now serving with the colors. Besides these troops account must be taken of the volunteers and reserves, aggregating about 85,000, and bringing the grand total up to nearly a third of a million.

But in considering the military resources of India consideration must also be given to the Imperial Service Troops of the native states.

Exclusive of Afghanistan, Nepal, and Bhutan (which may be considered within the sphere of British influence, though independent) the native states cover an area of 700,000 square miles, with a population of 62,000,000, and maintain troops to the number of 100,000. Of these, about

16,000 are "Imperial Service Troops"—that is, troops that would be at the disposal of the Indian government in case India were attacked. These troops were organized about fifteen years ago, while Lord Dufferin was viceroy of India and Sir Mortimer Durand was foreign secretary. They are inspected by Indian army officers and their organization conforms to that of the native Indian army. "It is hoped," said Lord Dufferin, in explaining the relation of these forces to the Indian government and to the governing authority in the native states, "It is hoped that in this way, while each force will remain a purely state force, recruited in the territories of its chief and serving within them, the troops composing it will be gradually made so efficient as to enable the Imperial Government to use them as part of its available resources to meet any external dangers."

This force consists of the following: Mountain artillery, 300; cavalry, 7,435; infantry, 8,150; sappers, 508; transport carts, 1,700, and a camel baggage train of 1,068 camels.

This is not a very large force, but the fact that it is maintained by the ruling princes of the native states goes far to assure their cooperation in the event of an attack by Russia or other foreign power.

It has long been the wish of army officers in India to see India become "self-contained" as regards military equipment, arms, ammunition, etc., and under the influence of Lord Curzon and Lord Kitchener this will soon be realized.

Factories already exist or are being built as follows:

Gun-carriage factories at Fatehgarh, Bombay, and Madras, with a new central factory (which will eventually absorb all of these) at Jubbulpore.

Cordite and gun cotton at Wellington.

Ammunition factory at Kirkee and at Dum-Dum.

Rifle factory and rolling mills at Ishapur.

Foundry and shell factory, Cossipore.

Gun factory, Cossipore.

Harness and saddlery factory at Cawnpore.

Harness and saddlery workshops at Madras.

Horseshoes and horseshoe nails at Cawnpore.

Clothing is supplied by contractors.

These establishments are not far enough advanced to meet the immediate demand for new guns for the artillery; consequently 18 batteries of field artillery and 3 batteries of horse artillery are to be equipped with the new quick-firing guns made in England; but it is expected that the Indian factories will be able to make the remaining guns required for this rearmament. Seventy-one thousand five hundred and seventy-four rifles of the new pattern are being manufactured in England for the British troops in India, but both these guns and rifles are paid for by India. It is expected that manufacture will commence in the gun-carriage factory at Jubbulpore, the rolling mills at Ishapore, and the gun factory at Cossipore before the middle of next year.

Not only is it proposed to make the Indian army independent of Great Britain in the matter of guns, rifles, ammunition, and material, but also in the matter of education and training of the personnel. Two hundred thousand rupees ($65,000) have been appropriated for erecting the necessary buildings at Quetta, and while they are being constructed temporary quarters will be provided at Poona. No agreement has yet been reached with the Home Government as to the credit that will be attached to graduation at the Staff College at Quetta, but it is the desire of the Indian government that it shall be considered equivalent to graduation at the Staff College at Camberley, England.

There is a school of musketry at each of the following places: Deolali, Changla Gali, and Parchmarhi. There is to be a school of cookery at Poona.

There is a mounted infantry school at Bangalore.

India has a population of about 200,000,000, exclusive of the native states, and has an army, as indicated above, of 330,000 men, including volunteers, reserves, and Imperial Service Troops, and for the maintenance and improvement of this army about 35,000,000 rupees ($11,600,000) is expended annually.

The primary duty of the army, as stated above, is to secure tranquillity in India and to defend India against Russia, but it has been pretty well established in recent years that the native Indian troops are willing to serve abroad and that when sent on foreign service they will render a pretty good account of themselves. It may also be taken for granted that the British Government will not hesitate in the future to utilize their services against any country with whom she may be at war.

These considerations are causing the world at large to take an increased interest in the reorganization and development of this army, which is now being accomplished under the guidance of that experienced soldier and organizer, Lord Kitchener.

The increasing capacity of the military factories has been referred to and some reference to the more important changes in organization and training should be made.

In time of peace the tendency in every army is to hedge the officer about with so many requirements, commonly known as "red tape," that to avoid the difficulties that result from taking the initiative he refers pretty much everything to his superior, and he in turn to his superior, until almost everything, both great and small, is carried up to the war office. Under this process the Indian army regulations had assumed great proportions and one of Lord Kitchener's first acts was to arrange for a complete revision and simplification of them. These new regulations have been published.

An order, No. 246, covering the subject of higher training and military education of officers, the distribution of staff duties, and the responsibility of general and staff officers, was published April 11, 1904.

Competitions between regiments and battalions in the British service in all matters of sport have been in vogue for a very long time, and competitions having for their purpose the determination of the relative military proficiency of units in musketry and artillery fire, have been held in the past. A system of marking has now been introduced in India to determine the relative efficiency of all battalions of infantry. The allotment of marks makes a grand total of 500, of which 200 is given for attack and defense.

General officers commanding districts determine according to this system of marking which is the best British and Indian battalion in their districts. Lieutenant-generals in a like manner determine which are the best-trained battalions in their commands. A board of officers is then appointed from army headquarters to determine which is the best-trained battalion in all India.

The order publishing the regulations under which these contests are held has not yet been received, but the original memorandum sent out by Lord Kitchener to the lieutenant-generals for comment and opinion provided for the most practical test for the determination of efficiency. If this has not been modified in the new order, a battalion will be called upon, in the test for marching, to march 15 miles under service conditions preparatory to carrying out an attack with ball ammunition. Each man will carry 100 rounds, of which one-fifth will be expended, and another 20 rounds per man will be carried on mules and issued while the attack is taking place.

Scouting and outpost work day and night will give officers and men a chance of showing their proficiency, not only in reconnoitering and patrolling, but in signaling and transmission of reports, while the knowledge of duties and initiative shown by all ranks will be rewarded.

As stated above, 200 of the 500 marks are allotted for attack and defense. The whole subject of attack and defense is divided up into several headings, among which may be mentioned capacity of subordinate command, fire discipline and control, fire attack, construction of cover and the use of the spade in attack and defense, the adoption of formation suitable to the ground and to the fire, the actual assault and rallying, counter attacks, etc.

Marks ranging from 20 to 40 will be given for duties in bivouacs, night operations, transport duties, and miscellaneous duties, in the last named being included knotting, lashing, and bridging, bayonet fighting, gymnastics, and physical drill.

The night operations will include a retirement of at least 10 miles followed by a pursuing force. For every man that falls out on the 15-mile march to the attack or on the night march of 10 miles one mark will be deducted. Deductions will also be made for men of any unit who are unable to participate in these severe tests on account of diseases not contracted in the line of duty.

In the competition between the batteries and artillery brigades, the instructions for practice issued annually by the British war office are taken as a guide, but these are supplemented by special instructions issued from the headquarters of the Indian army. Among the new practice problems this year in India is the following:

"A small body of infantry attacks artillery in position, the time taken in covering the distance from 1,500 to 1,200 yards to be noted; the infantry then withdraw to a flank to watch the practice of the artillery on surprise targets to represent infantry, which remain up to the same length of time that the infantry took in advancing those 300 yards: the effect of the artillery fire is noted at the termination of this interval, and places are now changed, dummies replace the personnel and guns of the battery, and the real infantry men, less the number of casualties caused by the artillery fire, now fire on the battery for the same length of time as the battery was firing. Artillery versus artillery can be similarly treated, and much valuable instruction obtained in selecting positions and concealing guns as much as possible."

The increasing physical and mental effort that this modern method of training for war makes on the enlisted man is having its effect. The life of the common soldier in time of peace is no longer one of comparative ease, and the number of men who are willing to enlist for the mere love of soldiering, regardless of the pay, is diminishing, and countries like Great Britain and India, where service is voluntary, may soon be forced to adopt compulsory service or make even still greater additions to the pay of the enlisted man. This strenuous life in time of peace is also affecting the officers' corps, and in the future Great Britain will not find so many of the sons of rich men who are willing to pay from $1,000 to $2,000 a year for the privilege of holding a commission.

This does not affect the officers of the Indian army so much as that of the British army, because the scale of living is lower in India than it is at home; more of the officers are poor men and the pay is better.—M. I. D. 2865.

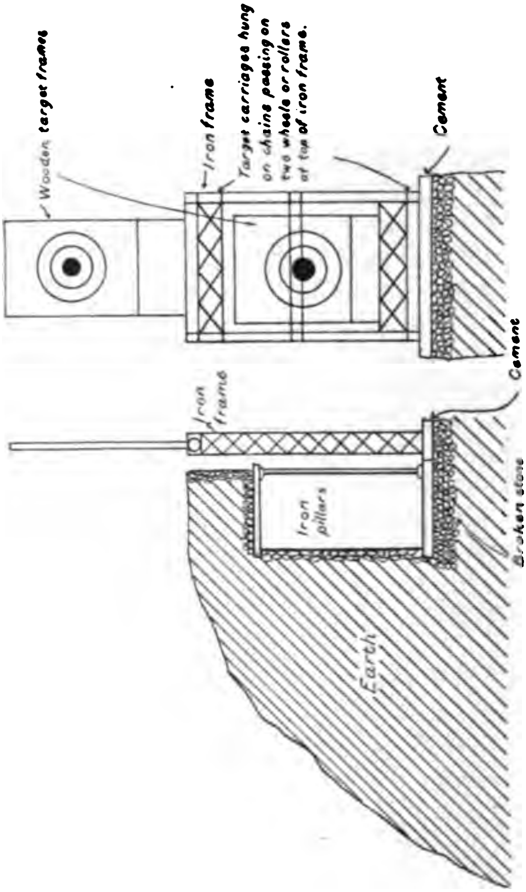
THE FEDERATED MALAY STATES.

MILITARY FORCES.

The military force of the Federated Malay States consists of a regiment called the Malay States Guides, to which is attached an artillery corps. It is composed almost entirely of Sikhs and Pathans. The latter are sometimes spoken of as the Mohammedan Sikhs, and do not wear beards. Both Sikhs and Pathans are splendid-looking men, and their profession is soldiering. They are very submissive to discipline, careful and proud of all the forms and ceremonies. They are said, however, to lack initative, and although fight bravely when well led, still the moment they are deprived of their white leaders their value in a large measure is gone. The field and most of the company officers are those of lower grade from the British army. There are a number of native officers. The regiment is about 1,000 strong, quartered as follows: Two companies at Kuala Lumpur, State of Selangor, and 6 companies and headquarters at Taiping, in the State of Perak. The lieutenant-colonel commanding is a very energetic and active man, and one of great ability. The adjutant, Capt. E. I. M. Barrett, of the Lancaster Fusileers, is an especially energetic and capable officer. They are uniformed with handsome turbans, and even their khaki uniform is striking. For dress occasions they have the British red coat. For the field their equipment is very simple. They use a khaki-cloth haversack, which has the advantage of being cheap, and perhaps is durable enough for their service. They have for fatigue work a light-blue flannel shirt without a collar and a handsome green turban. The British resident of each of the four native States has a guard furnished from this regiment, principally for display. The Sultan and many of the native chiefs are received with guards of honor whenever they visit the resident or the State capital.

The target range at Taiping is one of the best I have ever seen. The long-distance firing is up to 1,200 yards; the butts are against a mountain. The figure shows a cross section; the overhanging cover enables the space between the butt and the target to be small, thus preventing the loss of many otherwise good shots.

The targets were on an upright iron frame, and had vertical motion, working on chains over wheels at the top. These frames of stands permitted three sizes of targets to be used.


Wooden target frames
Iron frame
Target carriages hung on chains passing on two wheels or rollers at top of iron frame.
Cement
Cement
Iron frame
Iron pillars
Broken stone
Earth

The butt was floored with cement; the cover was upheld by iron posts and iron rails. Like everything else in the British and Dutch colonies, the targets and the butts were nicely painted or whitewashed. One of the main advantages of the range was that it approached service conditions, the jungle on either side, the rough ground, and shooting over a road which crosses the range at 500 yards. There were many disappearing targets very simply arranged, some on the open ground, some imitation men behind breastworks or shelter.

Two men shoot alternately at one stand of target.

When a shot is fired the target fired at is lowered and looked over by the markers. The position of the hit is indicated by a disk placed over the corresponding location in the other target which is up, a square piece of black cardboard is then placed over the actual hit, by means of a brass hook, and when that target is again raised the firer can see the result of his last shot thus indicated.

A gun with silhouette cannoneers, a track running across a portion of the range, on which an imitation armored car, with a gun and crew, offered fine moving target. Another target arrangement represented a column of troops marching down a hill toward the shots, was suspended on a wire, and consisted of a number of groups of silhouette figures arranged as in a column of troops. There was a painted canvas on a frame to represent the front of a house, with a window and a door which could be opened and shut, presenting the figure of a soldier in the window and in the doorway. A very good simple moving target was the silhouette of a soldier creeping, with his gun carried about the knees. This was on a light frame about 4 feet square and was carried on a pole like the signs which one sees carried about in the streets. A man carrying this moves up and down behind the butt. The target appearing above the latter makes a very good moving objective.

FRANCE.

THE TWO-YEAR SERVICE.

The army commission of the Senate engaged in advising upon the plan of a law touching the introduction of a two-year service period has agreed to the exceptions designated by War Minister Berteaux, in opposition to the views of the deputies, and deemed by him essential for the maintenance and replacement of a sufficiently strong and trustworthy officers' corps. Accordingly there are excepted from the two-year service obligation the cadets of the war school St. Cyr and those students of the Ecole Polytechnique who devote themselves to an officer's career. They have to spend only one military year at the front before entrance into these institutions. The same is true for the students of the Ecole Centrale and Normale, the high schools of forestry, public architecture and mining, and of the scholars of the Ecole Polytechnique who enter the civil administration, except that these classes must serve a second year as sublieutenants of reserves at the close of their studies, provided they have shown their capabilities as reserve officers in the examinations held at the end of their first year of service.

An article newly introduced into the plan by the Senate commission contains the following exceptions: Those under obligations for military service who have attended none of the specified high schools, but who will strive for qualification and the grade of sublieutenant of reserves may at the conclusion of the first service year be admitted to the examinations. By passing this examination they attain the position of aspirant for a commission. Then after they have completed their instruction in another six months of service, they can be nominated as sublieutenants of reserves; and in this capacity they are absolved from the balance of their two years of service. Similar regulations obtain for students of medicine and pharmacy.

On the other hand, the Senate commission has declared for the two-year service period in the Algerian and Tunis contingents, although the governor-general, Jonnart, had recommended the maintenance of the one-year service period. According to the wish of the war minister, the law is to go into effect one year from its adoption. If this occurred on April 1, 1905, the new regulations would obtain from April 1, 1906, being retroactive upon the 1905 yearly class.—*The International Review.*

MEDICAL STATISTICS.

The report respecting the medical statistics of the French army of the interior, during the year 1902, just published, is based upon a total strength of 485,207 officers, noncommissioned officers, and soliders, and upon a force present for duty of 429,038 soldiers of all categories.

The total number of sick, "a la chambre," has been 435,296, representing a proportion of 1,058[a] per thousand of the men present; 160,431 men, or 389[a] per thousand, have been treated in the regimental infirmaries, and 99,568, or 205[a] per thousand have entered the hospitals.

The total number of deaths amounts to 2,062, or 4.24 per thousand, showing a perceptible lessening over preceding years (4.98 per thousand in 1898, 5.43 per thousand in 1899, and 5.73 per thousand in 1900). Out of 1,000 deaths, bronchitis not tubercular caused 2, bronchial-pneumonia 63, pneumonia 52, tuberculosis 205, pleurisy 30, congestion and pulmonary apoplexy 15, erysipelas 3, diphtheria 12, rheumatism 9, measles 23, cerebro-spinal meningitis 16, primitive meningitis not tubercular 19, dysentery 16, grippe 96, heart diseases 9, marsh fever 1, scarlatina 41, appendicitis, typhlitis, and perityphlitis 13, nephritis 22, accidents and traumatic lesions 75, typhoid fever 123, suicide 47.[b]

The examining boards having appeared less rigorous in 1904 than during the two preceding years, the minister of war, aiming to improve the sanitary condition of the army, and also to restore the total strength to the budgetary provisions, has just directed that all the men now incorporated, and especially the recruits of the new contingent, shall be subjected to a careful examination and observation by the surgeons of the corps, for the purpose of eliminating, temporarily or finally, all those who, for any cause whatever, shall not exhibit sufficient strength of endurance.—*M. I. D., 562.*

---

[a] These figures per thousand appear to be inexact. According to my own reckoning, 1,058 should be 1,015, 389 should be 369, and 205 should be 228 (Tr.).

[b] The total would only be 802 (Tr.).

THE FRENCH SOLDIER'S PACK.

Over a year ago General Pendezec, chief of the general staff, upon its demand made the following statement to the Chamber of Deputies concerning the soldier's pack: "Since the memory of man the question of lightening the soldier's pack has occupied military committees. In recent years several orders have brought the weight down to 18 pounds. This weight the minister of war still finds excessive, and everybody, above all the war board, agrees with him in thinking this weight on the back incompatible with the exactions of modern fighting. At every moment the infantry soldier is obliged to drop flat on the ground and fire in this position, and we find that with a pack on his shoulders it is difficult and sometimes impossible for the soldier to use his gun.

"The minister consulted the war board on this subject, and these officers sought last year to reduce the number of articles carried by the soldier, while at the same time increasing the rations always borne on his person; for it is acknowledged that two days' rations are no longer enough for the man to carry into battle, since this may last a number of days and the man must live and he can't fall back.

"The minister also gave formal orders to the president of the infantry board to make the study of this question of first importance, in order to see not only how the pack can be lightened, but how it may be divided into two parts, the one carrying rations only and the other, which could be left behind in battle, comprising clothing, etc."

Since General Pendezec's statement the infantry board has recommended the following:

To be carried on the soldier:

1. A knapsack of flexible material (instead of the present box), containing only indispensable articles, and whose

weight complete must not exceed 7.7 pounds. These indispensable articles are considered to be one shirt, one mess tin, and the emergency rations.

2. The cartridges and intrenching tool to be carried on the waist belt.

To be carried in wagons:

1. The company wagon to carry neither cartridges nor tools: it becomes a baggage wagon for the men's extra clothing. Each man's clothing will be rolled in a separate bundle and put in a linen haversack bearing his name. This bundle will contain a jersey instead of the shell jacket, as at present; a pair of soft canvas slippers instead of the present barrack shoe; one brush, and the soldier's handbook. This company wagon will also carry the officers' baggage, part of the third day's rations, and a supply of shoes.

2. The large squad mess tins are abolished.

3. The cartridges formerly carried in the company wagon will be united in a battalion caisson. For this purpose the caissons of the old 90-millimeter gun can be utilized.

4. The wagon of the cantinière and the regimental clothing wagon are abolished.

The reduction in weight thus effected amounts to 11 pounds per man.

The above has been accepted in principle, it would seem, by the war department, and the financial part of the project is now being studied out.—*M. I. D., 781-b.*

REGULAR AND PERIODIC WEIGHING OF MEN IN THE RANKS.

Modern researches having proved that the frequently repeated verification of the weight of men will furnish to the military surgeons very useful indications for the diagnosis of certain affections, particularly tuberculosis, a departmental direction of October 31 last directs that *all* the men in the ranks, including the noncommissioned officers, shall be subjected to regular weighings, which shall occur once a month. The weighings shall occur more frequently for the sickly and for all those whom the surgeon shall consider it advisable to subject to special observation. They will attend to the same men at the same stated time of the day.

Individual descriptive cards made out by the companies, squadrons, or batteries and collected in a pasteboard box in alphabetical order shall be delivered to the chief surgeon on duty with the corps.

There will be entered on the face of each card a description of the man as well as mention of the diseases or wounds which have occasioned his removal to the infirmary, the hospital, or sent him on convalescent leave.

The back of the card is intended for the registry of the weights. It is made out in square form analogous to temperature reports.

The heavy horizontal lines correspond to kilograms—5 above and 5 below the weight of the man at the time of his incorporation. The intervals between the heavy lines are divided by four thin lines, corresponding to double hectograms.

The vertical spaces serve for indicating the months.

The monthly weights are noted by a point, and the points are afterwards joined by a line as in the case of the thermic curves.

The sanitary descriptive cards are preserved with the records of the infirmary for five years at least after the discharge of the men.—*Bulletin de la Pusse.*

THE DISTRIBUTION OF FRENCH FIELD ARTILLERY.

When by the decree of July 12, 1904, the two artillery regiments in each army corps were assigned one to each infantry division in peace there arose the question, How will the artillery be distributed in case of mobilization? Formerly one artillery regiment was designed to furnish artillery for the two mobilized infantry divisions, while one regiment was to serve as corps artillery. From the July assignment of both regiments to infantry divisions it was assumed that this formation, abolishing corps artillery, would obtain under war conditions. Indeed, in the great maneuvers northwest of Paris in the fall of 1904, conducted by General Hagron, the entire artillery of both corps was distributed along the infantry brigades, and the divisional connection was done away with. From a definite report of the Armeè territoriale it now clearly appears that in case of war the corps artillery will continue to exist and will be formed in case of mobilization by the giving up of both regiments. Each infantry division retains, as formerly, six batteries. This turning over of artillery has been newly regulated in the preparations for mobilization. It is expressly stated by the war minister that the decree of July 12, 1904, assigning the two regiments to the divisions, was only an experiment and not a final measure. The formerly used designations of one regiment as the "Divisional artillery regiment" and of the other as the "Corps artillery regiment" are not to be abolished, and in the printed orders of mobilization are not to be replaced.—*The International Review.*

FIELD HOWITZERS.

The Neue Militärische Blätter announces that the French field artillery will be provided with howitzers of 10.5 centimeters. The organ mentioned remarks that, "The experiences of the Russo-Japanese war demonstrated the need of this engine of war in the attack of positions provided with bombproof shelters, and that the field howitzers of 12 centimeters and of 15.5 centimeters, with which the heavy artillery of the army is now equipped, are not sufficiently mobile to follow the troops under all circumstances and reach desired points seasonably. It is probable that the three batteries of light field howitzers will be attached to each army corps."—*M. I. D., 563.*

ASSIGNMENT OF FIELD ARTILLERY TO DIVISIONS.

By application of the order of July 12, 1904, which attaches in time of peace the regiments of field artillery to divisions of infantry, a provisional instruction of November 14, 1904, assigns to that division of the army corps bearing the lowest number the regiment of divisional artillery, and to the other division the old regiment of corps artillery. Four divisions contain only one-half of a regiment (six batteries), for while the French organization numbers 40 divisions and 40 regiments of field artillery, two of these regiments, constituting the nineteenth brigade, are assigned to the nineteenth corps, stationed in Africa.

The same instruction defines as follows the prerogatives and duties of the division and brigade generals commanding the artillery of the army corps.

The general of division is responsible for the state of preparation for war of the artillery placed under his orders. He attends the inspections which he judges expedient, *assists as much as possible at the target practice, and completes contingently the critical examination of the general commanding artillery.* He decides on the list for promotion, receives the daily report as well as the routine papers prescribed by the regulations, investigates service matters, and in a word exercises the functions of a chief immediately over the artillery regiment of his division.

The general commanding the artillery of the army corps assumes the part of permanent inspector by delegation from the commander of the army corps. He maintains the uniform application of the principles of the regulations in the two regiments of the arm, receives the programmes of instruction established by the chiefs of corps, programmes which he immediately transmits with his advice to the division commander, who notes upon them his observations before they are submitted for the approval of the commander of the army corps; he looks after the execution of these programmes, verifies the results obtained, and forwards to the commander of the army corps, as often as it appears expedient or he is ordered to do so, an abstract report upon the observations made by him, with his recommendations. This report is transmitted through the medium of the division commander, who also notes upon it his own observations, if any appear necessary.

The general assigned to command the artillery always aids at the target practice and sees that all the regular requirements and the orders promulgated by the commander of the army corps for the execution of the firing programmes are complied with. He is responsible for the remount service and the preparation for the mobilization of the element pertaining to the artillery, which do not enter into the organization of the division; he entirely controls the placing of the artillery of the army corps and directs the experiments or investigations in reference to matériel.

The recommendations for official promotion are transmitted to the division commander by the general assigned to command the artillery, who, from the techincal point of view, rates them by means of remarks and numbers indicating preference.

A general classification of all the artillery officers of the army corps is also established by the general assigned to command the artillery. But this document, merely consultative, is designed only for the information of the army corps commander.

SUBDIVISIONAL RECRUITING.[a]

Until now the young men of the quota, excepting the exempts rendering only one year of service, were incorporated into corps stationed outside the district subdivision of their residence and, at the time of their transition into the reserve, that is, at the expiration of their third year of service, they were assigned to the units of the same arm in the district subdivision of their residence.

For this reason the mobilized units include a large proportion of reservists who have received military instruction in other corps and are therefore unacquainted with their chiefs and unacquainted with each other.

The reasons which have led to this system, among others, in order to remove the young soldier from his home, having lost a great part of their value through the ever-increasing development of ways of communication, which has unified the national life, the minister of war has directed that young men shall in the future perform their military service in the district subdivision of their residence; that is to say, that they will be incorporated in the line where they would be asssigned as reservists.

The new manner of recruiting by district subdivision or reserve subdivision, says the circular of October 3, 1904, will render the amalgamation and fusion of the elements constituting the peace strength with the men of the reserves easier and more beneficial; the mobilized units will gain in cohesion and value and the operations of mobilization will become easier and more rapid.

---

[a] French territory is divided into 19 army-corps districts, each district into 8 regimental subdivisions; 2 districts comprise only 4 subdivisions and 1 of them has 9. There are in all 145 subdivisions.

The units of the border troops will receive for reenforcements more men than the subdivisions of the interior, and the contingent of the great urban masses, notably of Paris and Lyons, will continue to be incorporated in corps stationed outside of these masses.

DEPOT OF DISABLED AT THE FALL MANEUVERS.

At the last fall maneuvers of the northwest General Hagron, director, installed in each army corps and in the rear of the line of battle a depot for the disabled.

This depot which, conformably to the progress of the operations, could be removed and transported from one locality to another in order to be kept constantly in connection with the troops, was under the orders of the chief of squadron commanding the baggage train of the army corps.

The chiefs of corps sent to this depot the sick and disabled considered capable of being returned to duty after a few days' rest. These men were cared for at the depot of disabled by the doctor assigned to it, and most of them were subjected to exercises in closed ranks, in the manual of arms, and also to certain employments and fatigue duties.

The results which General Hagron had anticipated were not generally long delayed; the men preferred to rejoin their corps, perceiving that all shirking had become impossible, and voluntarily, after getting rested, requested discharge from the depot of disabled.

Only men really sick or wounded were sent to their garrisons. If the depot of disabled had not been properly managed, all the men sent there would have remained in the rear until the end of the maneuvers and the units of troops would have been to that extent reduced in numbers.

Thanks to the initiative of General Hagron, some regiments which had reckoned on about 700 reservists out of an effective of 1,750 men, returned after the fifteen days' maneuvers with their complete force and without having needed to make any transfer of sick men.—*La France Militaire.*

MILITARY CYCLISTS.

Military cyclists are divided into two categories: (1) Bicycle dispatch riders; (2) cyclist units.

1. Dispatch riders.—The dispatch riders (in time of peace two and on mobilization five per regiment of infantry) are charged with the transmission of orders, reports, and communications of every nature between the staffs, regiments, and services. (Regulation of April 5, 1895.)

In order to provide the corps with a more practical and less burdensome machine than the model actually furnished by the artillery, the machines assigned to dispatch riders will henceforth be of the folding type in use among the cyclist companies.

The only interesting modification is the possible increase, when preparing the tables of war effectives, in the number of riders assigned to the infantry regiment in the field.

Conscription on mobilization will, moreover, furnish resources more than sufficient to satisfy these demands.

2. Cyclist units.—The first attempts at the organization of military cyclists were made in 1896. From 1896 to 1900 several units were constitued by way of experiment in order to determine (1) the organization of these units; (2) their clothing; (3) their equipment; (4) their camp equipage; (5) their armament; (6) the bicycle best fitted for war service; (7) the employment of the units in battle.

The experiments have led to the adoption of the present organization as a cyclist company of the sixth company in each of the following battalions of chasseurs:

Twentieth Army Corps: Second Battalion of Chasseurs, at Lunéville; Fourth Battalion of Chasseurs, at Saint-Nicolas-du-Port.

Sixth Army Corps: Twenty-fifth Battalion of Chasseurs, at Saint-Mihiel; Eighteenth battalion of Chasseurs, at Stenay; Ninth Battalion of Chasseurs, at Longwy.

Company No. 6 has been organized as a cyclist unit with the following composition:

One hundred and twenty men (175 on mobilization), 4 officers, 9 noncommissioned officers, 12 corporals, 4 buglers, 95 soldiers (of whom 4 were mechanics).

These cyclist companies are under the orders of their respective chiefs of corps (i. e., commissioned officers of the chasseur battalion).

They use the folding bicycle of the Société Nationale de la Bicyclette Plianta (improved Gérard system).

Their rôle in the field is defined by the regulation of September 10, 1904, which also determines the instruction to be given them in time of peace. The cyclist units must be considered as fractions of infantry capable of moving with great rapidity, but partly tied to the march front.

They must be employed, especially in defensive combat, to retain a point of support or an important position until the arrival of the infantry. They may be called upon to act as a support to artillery and cavalry; they are less suited than the cavalry to reconnoitering.

Their flank being difficult to defend on the march, their isolated employment is exceptional. It is rather in conjunction with other arms that they are capable of rendering great service.

Nevertheless, however important they may be, their utility must not be exaggerated. Such is the almost unanimous opinion of the experimenters.

In any case, should it become necessary to form other cyclist companies, they must not be grouped in battalions, owing to the vulnerability and weight of such a unit, the length of the column, and the difficulties of command.

It must not be forgotten, moreover, that the qualities necessary in cyclists call for picked men, and that any increase in this direction will be made to the detriment of the infantry regiments.—*M. I. D., 1189–a.*

MILITARY BUDGET FOR 1905.

The budget for 1905 fixes the ordinary expenditures at 746,786,215 francs, as against 743,749,581 francs appropriated in 1904, and the extraordinary expenditures at 27,367,150 francs, appropriated in 1904. The total amount of both expenditures is therefore 774,153,365 francs for 1905, as against 773,792,581 francs appropriated in 1904. The net increase in the amount appropriated for 1905 over the amount appropriated in 1904 is thus 360,784 francs.

These estimates are for the support of the metropolitan troops stationed in France, Algeria, and Tunis, of the colonial troops stationed in France or in French colonies, and of the native troops stationed in French colonies. The war department budget contains items for military purposes amounting only to 679,329,916 francs, but the budget of the minister of colonies contains also items for the same purposes amounting to 93,405,154 francs, and the naval budget includes expenses for artillery amounting to 1,418,295 francs for the support of 210 officers and 1,083 men of the colonial artillery. Total, as above, 774,153,365.

ORDINARY EXPENDITURES.

Among the ordinary expenditures the items which follow are of interest:

	Francs.
General staff and staff services	12, 959, 620
Various departments and special staffs (personnel of contrôle service, intendance department, artillery and engineer's staff)	24, 687, 335
Military schools (personnel and materiel)	10, 942, 438
Pay of infantry	152, 988, 812
Pay of administration troops	5, 478, 162
Pay of cavalry	28, 350, 419
Pay of artillery	37, 945, 376
Pay of engineers	5, 114, 264
Pay of train	3, 616, 392
Departmental gendarmerie	33, 639, 082
Republican guard	4, 741, 020
Reserve and territorial army	455, 575
Artillery establishments (purchase and manufacture of material and ammunition)	27, 871, 070
Secret expenditures	530, 000

EXTRAORDINARY EXPENDITURES.

	Francs.
Siege train	540, 000
Field equipment	2, 168, 000
Armament of garrisons	700, 000
Armament of coasts	2, 980, 000
Small arms	2, 000, 000
Ammunition	900, 000
Experiments (artillery)	500, 000

	Francs.
Building and machinery (artillery)	690,000
Barracks	3,530,000
Drill and firing grounds	4,120,000
Fortifications	6,000,000
Engineer stores	480,000
Defense of Chzerta	1,862,000
Establishments (intendance)	90,000
Establishments (medical)	345,000
Material of cyclists	37,150
Railroads and geographical service	425,000
Total	27,367,150

The effective strength which served as a basis for the budget for 1905 differs as follows from that of 1904:

	Active army.		Colonial troops.		Gendarmerie and Republican guard.		Horses for officers and men.
	Officers.	Men.	Officers.	Men.	Officers.	Men.	
1904	28,990	520,830	1,791	25,781	683	24,034	143,973
1905	28,927	520,805	1,853	25,724	679	24,047	143,311
Increase			62			13	
Decrease	63	25		57	4		662
	−88		+5		−9		−662

The following tables show the distribution of staff, military school, and arms of the service:

Generals of division	120
Generals of brigade	234
Officers of the general staff service	950
Officers of the contrôle service	52
Intendance officers	1,460
Special artillery staff	2,203
Special engineer staff (officers, adjutants)	1,343
Total	6,362

Personnel hors cadres, not classed in troop units.

Recruiting, penitentiaries, native affairs	908
Medical personnel	1,321
Administrative personnel	1,560
Others	70
Total of the personnel outside of the staffs, schools, and troops units	3,859

Military schools.

	Officers.	Men.	Total.
Polytechnic school, special military school (St. Cyr), and all the schools of application, 18 in number	183	2,837	3,020

Distribution of the various arms of the service.

	Officers.	Men.	Total.
INFANTRY.			
163 regiments of infantry of the line of 4 battalions each, less 272 companies	11,157	267,907	279,064
30 battalions of rifles of 6 companies less 2 companies	996	28,306	29,302
4 regiments of zouaves of 5 battalions of 4 companies plus 2 depot companies	418	13,025	13,443
5 battalions of light infantry of Africa	165	7,605	7,770
4 companies of disciplinary fusiliers	16	1,000	1,016
2 foreign regiments of 6 battalions of 4 companies each, plus 2 depot companies	204	10,840	11,050
4 regiments of Algerian sharpshooters of 6 battalions of 4 companies each, plus 1 depot company	504	20,187	20,691
12 regiments colonial infantry of 3 battalions of 4 companies each stationed in France	1,164	20,390	21,554
Colonial troops stationed in the French colonies	371	14,383	14,754
Native troops stationed in the French colonies	830	33,097	33,927
Total infantry	15,825	416,746	432,571
ADMINISTRATION TROOPS.			
22 sections of staff and recruiting secretaries		2,419	2,419
26 sections of military administrative clerks and workmen		7,564	7,564
26 sections of military hospital attendants		4,829	4,829
In the French colonies:			
Staff secretaries		135	135
Military administrative clerks and workmen		855	855
Military hospital attendants		673	673
Total administrative troops		16,475	16,475
3 companies of Saharian troops	3	1,010	1,013
CAVALRY.			
79 regiments of 5 squadrons each (13 cuirassiers, 31 of dragoons, 21 of rifles, and 14 of hussars)	3,476	52,341	55,817
6 regiments of African rifles of 5 squadrons each	258	4,722	4,980
8 companies of remount cavalry	27	2,850	2,877
4 regiments of spahis of 5 squadrons each	164	3,287	3,451
Remount service: 1 squadron of Saharian spahis—native cavalry in the French colonies	21	515	536
Total cavalry	3,946	63,715	67,661
ARTILLERY.			
18 battalions of foot artillery	540	14,324	14,864
40 regiments of field artillery	3,170	47,665	50,835
Mountain batteries	62	1,877	1,939
African batteries	64	3,350	3,414
Musicians of artillery schools	19	741	760
10 companies of workmen	50	3,140	3,190
8 companies of artificers	12	303	315
8 regiments of colonial artillery of 12 batteries (4 field, 2 mountain, 6 foot)	230	4,780	5,010
Musicians of colonial artillery			
Others (colonial troops)	51	10	61
5 companies of workmen (colonial troops)	23	658	681

ments, constituting the nineteenth brigade, are assigned to the nineteenth corps, stationed in Africa.

The same instruction defines as follows the prerogatives and duties of the division and brigade generals commanding the artillery of the army corps.

The general of division is responsible for the state of preparation for war of the artillery placed under his orders. He attends the inspections which he judges expedient, *assists as much as possible at the target practice, and completes contingently the critical examination of the general commanding artillery.* He decides on the list for promotion, receives the daily report as well as the routine papers prescribed by the regulations, investigates service matters, and in a word exercises the functions of a chief immediately over the artillery regiment of his division.

The general commanding the artillery of the army corps assumes the part of permanent inspector by delegation from the commander of the army corps. He maintains the uniform application of the principles of the regulations in the two regiments of the arm, receives the programmes of instruction established by the chiefs of corps, programmes which he immediately transmits with his advice to the division commander, who notes upon them his observations before they are submitted for the approval of the commander of the army corps; he looks after the execution of these programmes, verifies the results obtained, and forwards to the commander of the army corps, as often as it appears expedient or he is ordered to do so, an abstract report upon the observations made by him, with his recommendations. This report is transmitted through the medium of the division commander, who also notes upon it his own observations, if any appear necessary.

The general assigned to command the artillery always aids at the target practice and sees that all the regular requirements and the orders promulgated by the commander of the army corps for the execution of the firing programmes are complied with. He is responsible for the remount service and the preparation for the mobilization of the element pertaining to the artillery, which do not enter into the organization of the division; he entirely controls the placing of the artillery of the army corps and directs the experiments or investigations in reference to matériel.

The recommendations for official promotion are transmitted to the division commander by the general assigned to command the artillery, who, from the techincal point of view, rates them by means of remarks and numbers indicating preference.

A general classification of all the artillery officers of the army corps is also established by the general assigned to command the artillery. But this document, merely consultative, is designed only for the information of the army corps commander.

SUBDIVISIONAL RECRUITING.[a]

Until now the young men of the quota, excepting the exempts rendering only one year of service, were incorporated into corps stationed outside the district subdivision of their residence and, at the time of their transition into the reserve, that is, at the expiration of their third year of service, they were assigned to the units of the same arm in the district subdivision of their residence.

For this reason the mobilized units include a large proportion of reservists who have received military instruction in other corps and are therefore unacquainted with their chiefs and unacquainted with each other.

The reasons which have led to this system, among others, in order to remove the young soldier from his home, having lost a great part of their value through the ever-increasing development of ways of communication, which has unified the national life, the minister of war has directed that young men shall in the future perform their military service in the district subdivision of their residence; that is to say, that they will be incorporated in the line where they would be asssigned as reservists.

The new manner of recruiting by district subdivision or reserve subdivision, says the circular of October 3, 1904, will render the amalgamation and fusion of the elements

---

[a] French territory is divided into 19 army-corps districts, each district into 8 regimental subdivisions; 2 districts comprise only 4 subdivisions and 1 of them has 9. There are in all 145 subdivisions.

It was the maneuvers of the east, directed by General Brugère, which the military attachés were invited to attend this year. The forces assembled consisted of two complete army corps (each comprising three divisions of infantry) and two independent divisions of cavalry of four regiments each. The seat of operations was between Dijon and Belfort, near the German frontier, over ground covered by the operations of Garibaldi's little army against the Germans in the Franco-Prussian war.

The effective of the troops taking part in the maneuvers was as follows:

	Men.	Horses.
September 4	53,543	10,764
September 8	53,170	10,723
September 13	52,783	10,500

It will thus be seen that in 9 days the casualties were 760 men and 264 horses, or 1.4 per cent for the men and 2.4 per cent for the horses.

The embarkation commenced September 16 at 6.30 a. m. and was finished at 4.50 p. m. the same day. The Twenty-seventh Brigade was sent off in 5 trains, the Twenty-eighth and a battalion of chasseurs in 5 trains, the Eighty-first and Eighty-second Brigades plus 1 battalion in 9 trains, corps headquarters in 1 train; in all, 20 trains.

The work connected with embarking the troops and stores is all performed under the direction of army officers of the railway staff, and constitutes an excellent instruction for them in this regard. The regular working of the railroad is not interfered with, and while this restriction would be disregarded in war time, it makes the problem more difficult and therefore doubtless more instructive.

The tendency to prolong the duration of the approach and the combat and thus make them more in accord with the realities of modern war was remarked upon in both 1902 and 1903. This year the resemblance to actual conditions was pushed still further. The operations of September 8 to 13, inclusive, constituted one continuous maneuver; the operations of September 8 were the continuation of those of September 7; similarly for the operations of September 14 and 15.

The week's continuous fighting south of Liao-Yang had just finished when the French maneuvers began, and many remarked upon the evident intention of General Brugère to reproduce some of the features of the campaign about which all were talking. Each day necessarily comprised some fighting—the seizing of a position by one or the other side, the clash of advance guards or outposts, an occasional night attack, etc., but for the most part each commanding general, having a well-defined object in view, was forced to maneuver and fight several days in succession before he was in a position to say that he had succeeded or failed.

The abundant employment of outflanking and turning movements did not preclude at all the direct attack in front. Indeed, the French maintain that in carrying out the elementary adage of "fix the enemy and then outmaneuver him," the fixing process can only be successfully performed by troops which attack, and which attack fiercely. Otherwise the "fixing" is a farce, and the antagonist can readily guess what is being done.

The influence in France of what may be called the English school—the people who were deeply disturbed in their tactical ideas by the south African war and its methods—has largely spent its force, and now the tacticians who hold that a hammer is always necessary for driving a nail are extracting from the accounts received from Manchuria a revenge upon the enthusiasts for extended lines. In any case it may be said generally that the French army believes in its present regulations for the conduct of the attack. The system recently so brilliantly defended and commended by General Langlois, while accepting every change, advantage, or trick offered by the latest weapons, still exacts a formation sufficient in depth to constitute a piercing instrument, and maintains that thin lines of fire, however well directed, can not drive an enemy from his positions and win a battle, while on the other hand they offer dangerous opportunity to a vigorous counterstroke.

The troops carry in their haversacks throughout the maneuvers two days' preserved rations. Certain days are fixed for the consumption of these rations. Thus on the 11th and 15th of September no fresh rations were issued, but the men were ordered to consume on each of these days one of the rations of preserved meat and hard bread carried till that time in the haversacks.

CAVALRY.

The cavalry attack against infantry is considered always possible if appropriate formations are used. The principles to follow are: Attack always in single rank; attack at the same moment every fraction of infantry which can cover with its fire the ground charged over; attack in successive echelons at 200 or 300 yards distance, either arranged checkerwise or one following the other.

On September 12, for example, toward the close of the day, after a furious cannonade and a long-sustained infantry fire, the infantry assaulted the Mausolée hill, while the positions to the east—infantry and artillery—were charged all at the same moment by two divisions of cavalry sweeping across the valley in brigade echelons. No one can say whether such a charge would have succeeded or not, for there was no real way of estimating the effect of the preceding fire action upon the defenders. The ground lent itself perfectly to the work, the flanks were secure, and the cavalryman maintains, with much reason on his side, that while the first echelons would have suffered terribly the succeeding ones would have finished victorious.

Remarks during previous years as to fighting on foot remain unmodified. The French cavalryman does not like it and rarely does it, and then not in the way we think rational. I have seen squadrons gallop furiously across an open space to within 400 yards of unshaken infantry, dismount and open fire, while the horses had no protection whatever, or had to be led across the open to find it.

ARTILLERY.

There is little to add to previous remarks on the artillery. The French are more and more satisfied with the new gun, which now after seven years is no longer new to them. The horse artillery is still armed with the field artillery gun for the corps batteries of horse, which is too heavy, or with the old 80-millimeter gun for the cavalry division batteries, which is not quick firing.

The use of indirect fire is not so prevalent at maneuvers as it would be in war, for many evident reasons, one of which is that the battery must be seen by the other side and by the umpires to have its work count.

The Vial reflector was used for the first time to show the antagonist and the umpires what was being fired at. Remark was made last year as to the crude system of guidons then employed to this effect. The reflector is in the main similar to a heliograph. When there is no sun a lamp is used to throw a ray in the mirror. The square box contains parallel blades for limiting the field of the flash.

One of these reflectors is (in principle) attached to each group of three batteries. When the battery comes into action the reflector is set up and its flash is directed upon the troops which are being fired at. This signal must be observed and respected. After a few blank cartridges are fired the long and short flashes of the reflector indicate the number and nature of the shots, and, if need be, the kind of troops—infantry, cavalry, etc.—fired on. This saves ammunition and gives a fairly accurate idea to the enemy and to the umpires of the shots that might be expected to come from the guns. The limited field of the flash prevents its being seen by, say, more than one group of opposing artillery.

The cannoneers of field artillery carry carbines which, when the guns are in action, are leaned against the hubs of the wheels near at hand. The mounted men carry revolvers. The artillery officers all agree that the carbines are no bother, and may often come in usefully, especially against cavalry charging as foragers or coming up suddenly on a flank. These officers all thought the pistol more dangerous to friend than foe, and believe it has no place in a battery.

The mounted men carry their kit on the horse, as in the cavalry. The cannoneers have a regular infantry kit, which is made up and strapped to the backs of the seats on the limber chests.

INFANTRY.

Some of the infantry troops carried the new experimental knapsack. It is soft instead of being rigid, as the old one is; it weighs less than half of the old one, and carries only the bare necessities. The rest of the man's kit is made in a package and carried in the company wagon.

The whistle seemed to be used less and less, signals to men on the firing line being usually made with the hand or transmitted from man to man. In column or when massed and not under fire the whistle is used to command attention; in action officers maintain it can not be heard when most needed, and, above all, the men can not tell whose whistle they hear. Therefore officers and noncommissioned officers lead their men in person, the movements of the troop conforming to those of its leader. This is especially the case in the cavalry, where commands of any kind are rarely heard. It is particularly noticeable at French maneuvers—the absence of noise and the shouting of commands.

The infantry did very little entrenching, but the engineer companies were given a good deal of this work.

Before executing a counter attack, infantry defending a position usually took off their packs before moving out to charge.

There was as little firing in the prone position as during previous years, and no creeping forward individually in attack.

The director of maneuvers had for the use of his headquarters two large and powerful automobiles and four light carriages. The latter were quite up to going across fields, which they often did. Each corps headquarters had one heavy and one light machine. Chauffeurs received the regulation allowance for their (own) machines, i. e., one-half cent per kilometer per horsepower, 17 cents per day per horsepower, and 50 cents commutation per day for privates and 60 cents for noncommissioned officers.

No balloon was used except a signal balloon.

There were four umpires, all major-generals.

MACHINE GUNS.

Seven battalions of chasseurs à pied had each one machine-gun detachment with it. While official information as to the assignment of machine guns to infantry troops is withheld, it is probable that the organization observed for these detachments will be the one definitely adopted for infantry battalions in general and that each battalion will eventually be given one machine-gun detachment.

Each detachment is armed with two Hotchkiss machine guns.

The personnel and material are divided into two sections—the shooting section and the combat train. The composition of the combat train is not definitely fixed, but it will be composed of either one or two caissons drawn by one horse (or mule) each.

The shooting section consists of 2 guns with 2 extra barrels, 14 ammunition chests, 1 chest of tools, and extra parts.

Animals.—One saddle animal for the detachment commander (lieutenant); 8 pack mules—2 for the gun, 6 for the ammunition chests. It is likely that 1 lead mule will be added.

Personnel.—One mounted lieutenant, 1 sergeant, 3 corporals, 1 mechanic, 9 men (2 pointers, 2 loaders, 4 carriers, and 1 orderly), 8 (or 9 mule drivers. All of the men carry carbines.

Each pack mule is accompanied by a mule driver, who generally leads the animal by the halter.

The gun is the regular Hotchkiss machine gun, mounted on a tripod, using infantry ammunition. The pack saddle has been especially devised for this gun. No lashings are used, all being slung to the saddle by hooks. The system of packing and of conducting the mule train seems to me inferior to our own.

EXTRACTS FROM THE SPECIAL INSTRUCTIONS FOR THE MANEUVERS OF 1904.

Each day, immediately after the close of the maneuver, the critique will be held by the director. Umpires, generals commanding the two sides, division commanders, and their staffs, must be present to hear the critique and to receive instructions for the following day; other officers may attend, but are not obliged to.

At night all soldiers must be in their cantonments and in the houses where they are lodged by 8.30 p. m. at the latest. Police officers will see that there is no noise before reveille.

Bands will be ordered from time to time to give concerts in the cantonments. The surgeons will see that the food and drink sold to soldiers are of good quality.

The service of security will function as in campaign. To relieve the fatigue of guard duty, however, the outpost reserves, the grand guards, and, when it rains, the small posts, will take such shelter as can be found near their positions. When it is cold, fires can be made. All men on outposts will wear their jackets under the capote. Hostilities will be suspended from 5 to 6 a. m. to enable the outposts to make their coffee and pack up.

The director of maneuvers will alone prescribe night attacks. Only the attacking troops and those immediately defending the position will take part. The outposts attacked will get under arms, but the alarm will not be given farther to the rear than the general reserve of the outposts. In case of success, the assailant will merely occupy the position sufficiently to resist a counter attack.

The themes given out will be as simple as possible, indicating merely the object to be attained and the situation at the beginning of the maneuver. The director reserves the privilege of modifying these themes, even in the middle of the maneuver, in order to create new and unexpected situations. The commanders of opposing sides will have complete liberty of initiative in accomplishing the objects sought. Special effort will be made to bring into play the reserves, the unexpected situations arising in war amply proving the importance of this training.

An intelligent use of cover in marches of approach and in the attack is of the highest importance. This applies especially to troops in the first line. Troops of the second and third lines must not run the risk of delay in coming into action at the right moment. They must therefore be kept in hand in a compact formation. The action must not be precipitated; the artillery must have time to act in a rational fashion and fully prepare the attack.

The director intends to consecrate two or more days to a single maneuver. In this way the operations will be more in accord with reality; time will be given for the correction of mistakes, and troops will be spared the excessive fatigue which results from trying to do too much in one day.

Important and commanding positions of the terrain must be made to play the same rôle they would have on a real field of battle. The attack or defense of such a position generally necessitates the employment of all three arms, or at least of infantry and artillery. Thus a field of battle usually presents several detailed and more or less separate actions, each of which should show the three successive phases of a fight, namely: The engagement of the first line, the preparation of the attack, and the assault. The partial combats delivered for the possession of these supporting points develop gradually and become progressively transformed into a general battle along the whole front.

After taking a position the attacking party must pause and take time to occupy it, re-form the forces, bring up fresh troops, and prepare, if necessary, for another forward movement.

In general, the decisions of umpires will be final. They will not even be modified by the director until the end of the maneuver. The decision of an umpire must be immediately obeyed, whatever orders the troops may have received from their own chiefs. Apart from the ground and the effectives engaged, the umpires will take into consideration the dispositions of each party, the conditions under which the artillery has cooperated on each side, and the rôle played by the cavalry. They will then note the ground won or lost by each side and indicate to the commander of the repulsed troops the place where he can re-form and the moment when he can, under the new conditions, resume the action.—*M. I. D., 797-n, 1904.*

HOSPITAL SERVICE MANEUVERS IN FRANCE.

Interesting medical service exercises took place during the latter part of last month in the territory of the Twelfth Army Corps, in the vicinity of Limoges, those on the 25th, 26th, and 27th being especially worthy of notice.

The programme of the 25th was the following: March of the various hospital corps formations and an engagement in which the service of the first line was developed, including the search for the wounded at night by artificial light.

During the fighting exercises the hospital corps had occasion to make experiments of the greatest interest. An ambulance received the wounded from the battlefield and treated them according to the war sanitary regulations.

A particularly interesting experiment was made at the end of the day—the search for the wounded in the thick chestnut woods, by means of the acetylene lamps that the searchers carried on their hats and in their hands, besides three very strong searchlights which assisted them.

On the 26th a field hospital and an overflow hospital were put in service.

On the 27th convoys of wounded were sent to a railway station, an overflow hospital having been organized there, and finally the wounded were sent to the rear.

Three complete camp hospitals in full regulation array were prepared, and on the 27th they left Limoges for the localities assigned them, where they were met at a certain hour by a convoy of carts and sham wounded.

All the necessary operations having been carried out within the time established, the loaded carriages were transferred to the station of St. Leonard, which was being used as an overflow hospital. Here two trains were awaiting the wounded, who were placed in special cars provided with suspension apparatus; the trains then left for Limoges, where a station infirmary, organized by the Society for the Help of Wounded Soldiers, acted as provisionment during a twenty-five minute stop.—*Italia Militare e Marina.*

NEW SUBMARINES.

According to Le Yacht, the three new French submarines, *Emérande*, *Opale*, and *Rubis*, will be the largest yet constructed. The displacement will be 422 tons; length, 146.5 feet; beam, 12.8 feet. They will have two propellers; the motive power will be gas or vapor on the surface and electricity from accumulators when submerged; the engine will be 600 horsepower, and the speed 12 knots. They will each carry 6 torpedo tubes. They will be more habitable than previous types, and have a larger radius of action.—*United Service Magazine.*

GERMANY.

NEW DETACHMENT OF MACHINE GUNS.

On October 1 the sixteenth detachment of machine guns of 6 pieces was formed from the troops already under arms.

This detachment has been assigned to the Sixteenth Army Corps, which was without one, and actually to the First Battalion of the Sixty-seventh Regiment, which is on garrison duty at Metz.

In the creation of this new detachment of machine guns the gunners have been provided by the infantry, the drivers and the horses by the artillery, and the saddle horses by the cavalry of the Sixteenth Corps.

On the same date, the forces of all the machine-gun detachments were increased by 1 " raffermato " (enlisted man) and 9 soldiers of the levy as drivers.

The cadres of the officers of each detachment are composed of 1 captain, 1 lieutenant, and 2 sublieutenants.—*Italia Militare e Marina.*

GROUPS OF MACHINE GUNS.

It is well known that the German army (if we except the English) is the best supplied of Europe with detachments of machine guns. It possesses already 15 groups of 6 guns completely organized and horsed, constituted into autonomous fighting and administrative units. These groups were all till now attached to regiments of infantry or to battalions of chasseurs.

They do not seem to wish to keep them there. Lieutenant-General Von der Boech, in a recent pamphlet in which he discusses the most useful augmentations to the army to ask of the Reichstag says that it is known that superior authority wishes to have, in the beginning at least, one group of machine guns for each army corps. There would remain eight to be created.

But this is not all. Opinion grows more and more with the authorities that the cavalry divisions, without being stripped of their artillery, which serves a different purpose, would be very advantageously provided with a group of machine guns; this would increase notably their defensive power, above all behind an obstacle, and would replace advantageously, in many cases, an infantry support which in Germany they are loath to attach to cavalry of exploration for fear that it may be only a hindrance.

They begin even to foresee groups of machine guns for the garrisons of fortified places or the divisions of the reserve charged with special missions (defense of the coast, etc.).

Much as the budget of 1904 provides only for the creation of a single group of machine guns, it should not be believed that the Germans will rest there, and one may expect to see created from year to year new groups.

Without placing ourselves on this track following the Germans and without admitting that their solution of the groups of machine guns entirely mounted on carriages or horsed is the best, we believe that one will do well in France not to lose sight of this question and to continue pushing actively the studies now under way on this subject.—*La France Militaire.*

PONTON BOATS.

The folding canvas boats in use in the German cavalry are about to be replaced by a material in sheet steel. The following are some details with regard to the latter:

Instead of 1 six-horse wagon for the folding canvas boat, each cavalry regiment will have 2 four-horse wagons, each of which will carry 2 half boats of sheet steel, 2 trestles, 4 portions of flooring, and the necessary anchors, oars, and ropes. In addition, a supply of explosives will be carried on each wagon. This matériel, according to what it is designed for, is capable of making a roadway of 1 meter for men on foot, of 2 meters for men on horseback, or for bridge 3 meters wide. Trestles and boats are used as supports, the latter either singly as half boats or else joined together, forming an entire boat. A raft supported on 2 whole boats may be formed from the matériel of a regiment, with a superficial area of 16 square meters.—*United Service Magazine.*

THE NEW "QUINQUENNAT" LAW, 1905-1909.

The following is the text of the bill (No. 502) now before the Reichstag to establish the peace strength of the German army for the five years commencing April 1, 1905:

We, William, by the grace of God, German Emperor, King of Prussia, etc., order in the name of the Empire, after the Federal Council and the Imperial Parliament shall have signified their agreement, the following:

ARTICLE I.

SECTION 1. From April 1, 1905, the strength of the German army on a peace footing will be annually increased until in the course of the fiscal year 1909 it reaches the number of 505,839 privates, lance corporals, and head gunners, at which figure it will be maintained until March 31, 1910. The respective State quotas are as follows:

Prussia, including contingents under Prussian military administration	392,979
Bavaria	55,424
Saxony	37,711
Württemberg	19,725

In so far as Württemberg can not furnish its quota in proportion to its population, the Prussian administration will supplement the Württemberg contingent with the number of recruits necessary to bring it to its peace strength.

The one-year volunteers are not included in the figures given.

Privates filling the positions of noncommissioned officers do not receive their allowances.

SEC. 2. In conjunction with the additions to the peace strength, as stated in section 1, the number of the existing units (Formationen) of organization will be so increased that at the close of the fiscal year 1909 there shall be:

Battalions of infantry	633
Squadrons of cavalry	510
Batteries of field artillery	574

Battalions of foot artillery	40
Battalions of pioneers	29
Battalions of communication troops	12
Battalions of train	23

SEC. 3. The increment in each separate fiscal year, and the distribution of this increment among the various arms of the service, the addition of commissioned officers, surgeons, military officials and noncommissioned officers, will be fixed by the annual imperial budget in accordance with paragraph 1 of this law.

ARTICLE II.

This law shall be applied in Bavaria in conformity with the specific provisions of the Federal agreement of November 23, 1870 (Bundesgesetzbl. 1871, p. 9), under III, section 5, and in Wurttemberg of the military convention of November 21–25, 1870 (Bundesgesetzbl. 1870, p. 658).

REMARKS.

The law of March 25, 1899, fixed the peace strength of the German army at 495,500 men to March 31, 1904. The law of February 22, 1904, extended the same to March 31, 1905. A new law is therefore of necessity from April 1, 1905.

The German Empire will continue also in the future its peaceful policy pursued for more than thirty years. To this end a strong, ready, and efficient army is necessary now as much as ever.

It is not purposed to surpass in number or even to equal all possible adversaries, but it can and must be insisted upon that the German Empire in drafting its male inhabitants for personal service in the defense of the country keeps apace with neighboring powers. This has hitherto not been the case. With the continuous increase of its population Germany has been prevented by financial considerations from carrying out fully the principle of universal conscription, and has been obliged to impose restrictions which have adversely influenced its military strength. France, on the other hand, with especial reference to Germany, has already drafted almost every serviceable man into the army and thus surpasses Germany in its fighting strength, although its population is nearly twenty millions less. This will possibly be the case to a still greater extent after the introduction of the two-year service term. We must therefore endeavor to insure that the element of power which rests in the number of our population is fully expressed by the number of trained men, inasmuch as in the latter is contained for us always the best guaranty for the continuous maintenance of peace.

This object will be attained gradually by granting the required increase in the peace strength of the army.

This increase will serve the purpose of removing deficiencies and defects in the army organization, which the military administration has been for years endeavoring to remedy and which impede the peace training, delay the transition to a war footing, and in mobilization may lead to disastrous consequences.

Considerations of perfect readiness for war and especially of the need for the protection of our frontiers, have frequently reacted upon the uniform and effective organization of the army. We possess army corps with fewer battalions than batteries, and divisions consisting of infantry and field artillery only, but lacking entirely in cavalry.

The scheme of organization requires in each army corps at least 24 battalions of infantry; in each infantry division at least 12. Such is not the case with 2 army corps in Prussia and with 2 divisions on the frontier.

And further, even in peace, divisions should form firmly organized bodies constituted from all arms. Upon this depends their efficiency in war. In Prussia the thirty-eighth and thirty-ninth divisions have no cavalry. This deficiency has already become for the peace training an actual evil, the mitigation of which, attempted during the maneuvers by transferring cavalry from other organizations, injures other parts of the army and is only a makeshift. In case of war, however, such defective organization leads to disintegration of the units or to the formation of new bodies of doubtful value where permanence is a necessity.

In providing for our cavalry we must go still further. Their comparative small number now forces us to augment them materially in the event of mobilization. Thus we deteriorate our good regiments. We greatly weaken their organization and military efficiency, with injury to the horse materiél, at a moment when the most nearly perfect state of readiness must be demanded. This hazardous, untenable state can be bettered only by the construction of new cavalry regiments in time of peace.

It is purposed to make them absorb the present squadrons of mounted sharpshooters (Jäger zu Pferde).

The present strength of the foot artillery and pioneers does not satisfy the increased demands made to-day upon these arms in mobilization.

The increase of the telegraph troops by a fourth battalion is also needed urgently if they are to carry out their important duties in war.

Finally, the recruiting depots require some additions to their grants corresponding to the more numerous reserve.

The augmentation of the Bavarian and Saxon contingents is based upon the same consideration.

The measures above set forth compel the increase of the peace strength by 10,339 men. As heretofore, it is necessary to fix the number for a long period (5 years) in order to secure for the development of the army a steady progress toward a set goal. On the other hand, when all the changes of organization shall have been legally sanctioned, these changes may be distributed over several years and appropriations made in the usual way.

The federate governments have determined to introduce, simultaneously with the present bill under discussion, a constitutional amendment definitely establishing the two-year term of active service for foot troops, mounted artillery, and train. The assumptions under which alone so important a procedure can be justified and executed will be explained in detail in the bill embodying the amendment. For the present it suffices to state that the military advantage of the shortened term of service consists only in the training of a larger number of men for war. But the more this mass grows the more numerous must be also the peace cadres, which support it in war, and so much more carefully must all defects of organization be removed under which suffers the rapid and orderly employment of the bodies to be mobilized.

Additional remarks to Article I, section 1.—The law is to take effect on April 1, 1905. Since, however, on account of the date of enlistment, the new formations (Formationen), etc., can be first introduced only in the autumn of 1905, the existing peace strength will until then remain unchanged. The extension of the law now in force was, however, not possible, because five of the squadrons of mounted sharpshooters specified in Article I, section 3, of this law (proposed) must be formed into a cavalry regiment by the 1st of April, 1905.

The quotas of Prussia, Bavaria, and Saxony in the total peace strength are proportional to their respective populations. The Wurttemberg quota will remain as fixed by the law of March 25, 1899; if it were computed on the basis of population, then it would be diminished from the present legal quota by 256 men, in consequence of the relatively smaller increase of Wurttemberg. In order to avoid such a measure, highly undesirable for military reasons, the corresponding number of recruits shall be drafted into the Wurttemberg contingent from the districts of contingents under Prussian administration.

Section 2.—While the peace strength, under the law of March 25, 1899, amounted to 0.95 per cent of the population of the Empire, it will in future be only 0.90 per cent.

The present formations are to be augmented by 8 battalions of infantry (7 Prussian, 1 Saxon), 9 regiments of cavalry of 5 squadrons each (6 Prussian, 1 Bavarian, 2 Saxon). The numbers include the 17 squadrons of mounted sharpshooters (Jäger zu Pferde) already existing, 2 Prussian battalions of foot artillery of 4 companies each, utilizing the 6 present companies, 3 Prussian battalions of pioneers, 1 Prussian telegraph battalion.

The required supply is obtainable from the surplus of men fit for service without any difficulty.

BERLIN, *November 22, 1904.*

BILL TO AMEND OBLIGATORY MILITARY SERVICE LAW.

The following is the text of the bill, No. 503, now before the Reichstag, to legally establish the term of active military service in general at two years:

We, William, by the grace of God, German Emperor, King of Prussia, etc., order in the name of the Empire, after the Federal Council and the Imperial Parliament shall have signified their agreement, the following:

ARTICLE I.

The following is substituted in place of the first clause of article 59 of the constitution of the German Empire of April 16, 1871 (Bundesgesetzblatt 1871, No. 16):

Every German capable of bearing arms belongs for seven years, as a rule, from the completion of his twentieth to the commencement of his twenty-eighth year, to the standing army, and for the succeeding five years to the first levy of the Landwehr, and thereafter until the 31st of March of that calendar year in which he completes his thirty-ninth year to the second levy of the Landwehr.

Of the seven years in which they belong to the standing army men of the cavalry and horse field artillery are compelled to serve the first three years with the colors without interruption; all others, the first two years.

ARTICLE II.

SECTION 1. In case the army must be strengthened, the men about to be discharged according to the terms of the last clause of Article I can be retained in active service by command of the Emperor. Such retention is counted as an exercise in the sense of the last clause of section 6 of the law of obligatory service of November 9, 1867 (Bundesgesetzbl. 1867, p. 181).

SEC. 2. Such of the foot troops, of the mounted field artillery, and train as have served voluntarily 3 years actively in the standing army, and men of the cavalry and horse artillery who, according to their service obligation, have also served 3 years therein need serve only 3 years in the first levy of the Landwehr.

SEC. 3. Men of the Landwehr infantry while belonging to the first levy of the Landwehr can be called out twice for exercises in special formations composed of men of the reserve (Beurlaubtenstand) for a period of 8 to 14 days, reckoned from the day of joining.

Landwehr cavalry will not be called out for exercises in time of peace.

The Landwehr men of all other arms exercise to the same extent as the infantry in separate bodies or duly joined to the troops of the line.

ARTICLE III.

SEC. 4. This law goes into effect April 1, 1905.

On the same date are suspended the provisions of section 6, clause 2, and of section 7, clauses 4 and 5, of the law dated November 9, 1867, of obligatory military service, as well as the provisions of Article I of the law dated February 11, 1888, relating to changes in the obligatory military service.

SEC. 5. This law (No. 503) takes effect in Bavaria in accordance with the detailed provisions of the Federal agreement of November 23, 1870 (Bundesgesetzbl. 1871, p. 9), under III, section 5; in Wurttemberg according to the detailed provisions of the military convention of November 21-25, 1870 (Bundesgesetzbl. 1870, p. 658).

REMARKS.

The law of August 3, 1893, regulating the peace strength of the German army provides for the period from October 1, 1893, until March 31, 1899, that during the term of obligatory service in the standing army the men of the cavalry and horse artillery should serve the first three years, and all others the first two years, uninterruptedly with the colors. On the expiration of this law it was ascertained that notwithstanding the shortened period of service of the foot troops, of the mounted artillery, and of the train, the requirements of the service were for the time being satisfied. A final opinion as to the effect of this shortened period upon the efficiency of the reserve could not then be given. The regulation mentioned was therefore continued in force by the law of March 25, 1899, at first until March 31, 1904, and then extended by the law of February 22, 1904, to March 31, 1905.

The federate governments at the time decided to temporarily introduce the two-year period of service only in anticipation of a number of measures which were considered indispensable partly to lighten the duty with certain arms and partly to advance their training.

The establishment of the fourth battalions was to serve the former purpose, and to a certain degree they afforded the desired help in taking over the training of the one-year volunteers, the burden of those on detached service, and the exercises of the reserve. Weighty reasons led to the discontinuation of the fourth battalions and to their combination into complete units. Although the organization of the army in general gained thereby, yet the measure meant the loss of important means, regarded as essential by the legislative bodies, to meet the difficulties accruing, especially in the infantry, from the two-year term of service. Nothing was done to compensate for this. The evil consequences have not failed to show themselves. They appear in an activity prejudicial to the physical and mental strength of the training personnel (commissioned and noncommissioned officers), and have led to regrettable occurrences unknown to the same extent during the three-year period of service. The training, the treatment of the men, and the relation between superior and subordinate have suffered in consequence. The continuation of this state of affairs can not be tolerated. Considerations of a political and military nature forbid returning to the three-year period of service, all the more as to-day the federated governments believe, although only from experience gained in time of peace, that the two-year period of service suffices to give a military training to the foot troops, to the mounted artillery, and the train. The final decision as to the expediency of the two-year period of service can be given only by war. We can not wait therefor. The task before us is to provide for the carrying the shortened period of service into effect; that is, for the present to introduce the measures absolutely necessary to lighten the duties.

In conjunction herewith we must extend the dispositions and arrangements for promoting the training that have already proven efficacious, if, in spite of the shortened period of service, we are to attain efficiency in the army and reserve. It must be indicated here that, under present-day conditions military training is possible only if ample funds are granted, which require to be greater the shorter the time at disposal.

Additional remarks.—Article I and Article II, sections 1 and 2: The provisions of the law of August 3, 1893, Article II, sections 1 and 3, referring to the length of service and peace strength of the German army, as well as of the law of March 25, 1899, Article II, section 3, referring to the peace strength of the German army, are permanently confirmed.

Article II, section 3: The full benefit of the legal period of the landwehr exercises must be obtained. The increased demands upon training in drill and target practice no longer admit the curtailment of the meager allowance of a fortnight by the time required for assembling and transporting the troops. The day of joining shall therefore be reckoned as the first day of exercise.

BERLIN, *November 22, 1904.*

SPEECH OF WAR MINISTER VON EINEM IN THE GERMAN REICHSTAG DECEMBER 3, 1904.

Referring to the proposed "Quinquennat" and military service laws, Minister Von Einem spoke, in part, as follows:

"In the present budget will be found a demand, repeated exactly as I formerly outlined, with the only difference that we ask for less. We shall abstain from bringing proofs that Germany must have a strong and efficient army, for we are all agreed that the German Empire can safely carry out and accomplish its mission in the world only by means of a strong and ready army. I leave out of consideration the powerful forces of our neighboring or surrounding military states, for these forces are so considerable that we can never equal them in numbers. This being so, we must approach the task with renewed energy, and improve the genuine value of the army, render the organization compact, and promote its training. These requirements are to be served by the two proposed laws, the 'Quinquennat' and that of two years' service. The Quinquennat aims at nothing further than to remedy the weak points and supply the deficiencies of our army. It will mend and complete the organization of the military forces and simplify the exceedingly difficult and complicated mobilization. * * *

"One must be very careful about drawing conclusions from the events of the Russo-Japanese war, inasmuch as cause and effect have yet to be established accurately: but one thing appears to me certain, also confirmed by military history, namely, that an army perfectly organized, when opposed to one of inferior organization, demonstrates at once its superiority in battles and skirmishes. And it is not necessary for me to explain here in detail the importance of being sure from the very beginning. The military history of every country teaches us this.

"What has been the character of our organization hitherto? * * * We have created bodies of men which, although bearing the name of divisions, are not really divisions. Our divisions are to be, in time of war, fighting units, in condition to operate and fight independently; they must for this purpose be composed of all arms and must be so constituted already in peace. For this reason we have already changed the organization of the artillery and added the artillery to the divisions. Now, we have divisions on the frontier and in the interior that, in respect to infantry, do not possess the required strength, and are lacking considerably, even to a third of this strength, and are also entirely without cavalry; a remedy must be found by the formation of new bodies. We have carefully considered whether it is possible to form battalions while maintaining the present peace strength; we have, however, answered this question in the negative. * * *

"Under no circumstances can we now consent to reduce the estimates for the infantry, * * * for it is precisely the infantry that must be strengthened and consolidated. * * *

"As regards cavalry there is nothing of great novelty in our proposal to the House; for the lack of cavalry and the necessity of rectifying such was long ago acknowledged by the House in the creation of squadrons of mounted sharpshooters. Now, I have read in the Freisinnige Zeitung that the experiences in the Russian war and experience in general lead to the conclusion that cavalry should be diminished and that only a certain fondness has led to its proposed increase. I must banish this thought far from me. I am perfectly aware that we must demand only what is essential. I am of the ópinion that in a future war the cavalry will play an important and significant part.

" I again invite attention to the fact that we possess divisions without cavalry, and that this evil has become evident since the formation in Saxony of a second and in Bavaria of a third army corps. This deficiency can not be made up by transfers. * * *

" The necessity of the increase of the cavalry is so intimately related to their distribution in case of mobilization and to the construction of formations in war that I am not at all in a position to specify publicly. I am, however, prepared to present the data in committee in no uncertain way and in the most exhaustive manner. Yet a word about the mounted sharpshooters. The idea of the creation of these troops was to have a body that should constitute excellent material for service as orderlies in conjunction with other arms. This object has in fact been perfectly attained, but that also is not sufficient. I shall demonstrate in committee.

" I now come to the two-year term of service. The European armies have continuously increased for many years. The 'rage du nombre' is no empty conception. The question of the two-year term of service is simply as follows: Is the prospect of victory greater with an army of only 200,000 men of three-year service or with an army of 300,000 men of two-year service? The latter view has been adopted and is the military reason for retaining the two-year term of service. Now, the army has been in a provisional state for 11 years. It is no secret that many officers, numerous leaders of troops, have regarded this provisional condition of a two-year-service term for the training of the foot troops with great anxiety.

"The mounted sharpshooters would have served as an excellent means for the increase of cavalry, but we should have required greater numbers in less time; we must have regiments—that I openly declare. There is likewise a question of the increase of special arms—the foot artillery, the pioneers, and the telegraph detachment.

"The results obtained have been hitherto entirely satisfactory, but they have been secured only by overexertion of the training personnel in all spheres. * * *

"For the period from 1860 to 1870, the soldier served, not 36 months in full, but rather 32, 33, and even 34 months; therefore 11 months more than now. Consequently I am entirely justified in stating that the final test of the two-year term of service can only be afforded by war, in the manner that war has affirmed the expediency of three-year service. It has furthermore been stated that men of the third year were actually only incumbrances; that may have been the case in some instances, but in general it was not true; men of the third year could be used in the training of troops. They also had more authority than men of the second year. The noncommissioned officers also received better training. In general it may be said that we have surrendered essentials in instruction by the introduction of the two-year term. You have yourselves acknowledged the necessity of compensation by granting the fourth battalions; but the latter have been discontinued for pressing reasons.

"Now, I do not deny that much has been done to alleviate this state of affairs. * * *

"The training of the army has become more extensive and more difficult; collective instruction suffices no longer, individual education must be substituted; the infantry man must be thoroughly disciplined, must be obedient, must think for himself, must be active, and judge the ground correctly. The closed drill must never be an end in itself; it must only serve to produce obedience and also enable the soldier to march well and correctly in large masses. Stress is always to be laid upon the fighting formations, the manner of fighting and the thoroughness of instruction in fighting. * * *

"We must do everything in our power to create for our noncommissioned officers a secure existence. We do this in assuring them of better pay at a certain period. Further means of instruction are to be provided by enlargement and improvement of the exercise grounds, by an increase in targets and shooting material. * * *

"Very important are also the exercises of the reserve. We can not complain of the behavior and the general training of the troops, but the fighting training is not perfect. The two-year term of service furnishes so many men that we can never think of calling out every man for the exercises enjoined by law; we have, however, the right to expect the means of calling them to a reserve or Landwehr practice.

"Estimates are submitted for the better equipment of our forces with the 1898 rifle. It is not a question of a new rifle, but of an old, well-tried one.

"Further estimates propose the introduction of the barrel recoil field gun. In committee I shall have the opportunity to give details upon the most excellent model which we have constructed.

"As you see, we desire to introduce improvements in the army which demand large appropriations. These improvements will be justified when it is necessary to demonstrate the readiness and efficiency of the German army."—*Berliner Tageblatt.*

SIMPLIFICATION OF THE DRILL AND FIRING EXERCISES.

The shortening of the term of enlistment of the infantry to 2 years is now followed (Cabinet order, dated January 27, 1905) by a simplification of the drill regulations and of the firing regulations, which eliminates from the drill regulations the backward march, the exercises in square, the double column, and increases the distances between companies in column of companies in order to form line to right or left. Some further simplification of the battalion movements will be announced in time by the war ministry. The double column was inserted in the Prussian drill regulations in 1812, and, until it showed shortcomings in the war of 1870, was a favorite form of attack.

The changes in firing regulations include the limitation of target practice to distances not exceeding 400 meters, the restriction of adding special exercises in target practice to superiors personally present at the firing, and now permit the holding of test firing in the open by order of regimental or higher commanders.—*M. I. D., 1176–i.*

MILITARY BUDGET.

In the military budget for 1905 the Government demands for the coming quinquennial period an increase of the peace strength of the army by 10,339 men, with the proviso that this increase shall take place not all at once, but by gradual stages in the time from January 4, 1905, to March 31, 1909, so that the army at the end of the period of calculation in 1909 shall have a total strength of 505,839 men (excluding the one-year volunteers) and of possibly 86,000 subofficers.

For the years 1905–1909 the military plans call for the following new organizations:

Eight battalions of infantry, viz, 7 Prussian, 1 Saxon; 9 regiments cavalry, viz, 6 Prussian, 2 Saxon, 1 Bavarian. These, with 17 squadrons mounted riflemen, will leave to be formed 28 squadrons, as follows: Seventeen Prussian, 8 Saxon, and 3 Bavarian; add brigade staffs, 3 Prussian, 1 Saxon; 2 Prussian foot artillery battalions of 4 companies each, using the 6 companies already in existence. The new formations will thus be two battalion staffs, 2 companies, 3 draft (wagon) detachments (1 of the foot artillery target school), 3 Prussian pioneer battalions with 3 regimental staffs of foot artillery, 1 Prussian telegraph battalion, 1 Bavarian telegraph company, 1 Prussian experimental company of business troops, 1 wagon detachment of telegraph troops.

* * * * *

In addition, in the budget for 1905 there is planned an important change in the organization of the technical institutes for infantry and artillery. The significance of this institute for fitting the army for war has increased from year to year. In its directions steadily increasing requirements are imposed. It is therefore ordered that in them only old, experienced officers are to be used. In consequence, the positions of directors of the institutes with supervisory management are to be filled by regimental commanders, that of subdirectors by staff officers.—*Internationale Revue.*

Budgetary strength of the German army for 1905, compared with strength of army for 1904 (including Bavaria).

Branch of the service.	Officers.			Noncommissioned officers and men.		
	Strength for 1905 (proposed).	Strength in 1904.	Increase.	Strength for 1905 (proposed).	Strength in 1904.	(+) Increase; (−) decrease.
Infantry:						
Infantry proper (216 regiments)	11,932	11,894	38	364,053	362,703	+1,350
Infantry instruction battalion	1	1	....	10	10	....
Schools for noncommissioned officers (9)	158	158	....	4,763	4,763	....
Firing schools (2) and rifle-testing commission	20	20	....	33	33	....
Rifles (18 battalions)	388	388	....	11,188	11,188	....
Machine guns (16 detachments)	64	64	....	1,382	1,382	....
Recruiting depots	864	861	3	6,027	5,969	+ 58
Total infantry	13,427	13,386	41	387,456	386,048	+1,408
Cavalry:						
97 regiments	2,446	2,412	34	67,642	66,598	+1,044
3 riding schools	25	25	....	299	299	....
Total cavalry	2,471	2,437	34	67,941	66,897	+1,044
Artillery:						
Field artillery (94 regiments)	2,996	2,996	....	63,817	63,816	+ 1
Field artillery firing school	66	66	....	1,370	1,370	....
Foot artillery (18 regiments)	883	876	7	23,606	23,348	+ 258
Foot artillery firing school	25	25	....	577	577	....
Draft detachments (11)	11	11	....	627	627	....
Experiment company of the artillery testing commission	5	5	....	257	257	....
Chiefs of artillery depots, etc	46	46	....	....	....	....
Total artillery	4,032	4,025	7	90,254	89,995	+ 259
Pioneers (26 battalions)	598	598	....	15,433	15,433	....
Communication troops:						
Railroad troops (3 regiments, 1 battalion, 2 companies)	177	177	....	4,393	4,495	- 102
Telegraph troops (3 battalions, 2 companies, 1 detachment)	50	50	....	1,532	1,532	....
Balloon troops (1 battalion, 1 detachment)	17	17	....	397	397	....
Experiment troops (1 detachment, 1 company)	13	8	5	120	5	+ 115
Total communication troops	257	252	5	6,442	6,429	+ 13
Train (23 battalions)	342	323	19	7,744	7,797	− 53
Special services	3,387	3,345	42	4,888	4,974	− 86
Imperial military court	8	8	....	....	....	....
Total army	24,522	24,374	148	580,158	577,573	+2,826 - 241
Net increase	....	....	148	....	....	+2,585

Budgetary strength of the German army for 1905, etc.—Continued.

NONCOMBATANTS.

	Strength for 1905 (proposed).	Strength in 1904.	Increase.
Surgeons	2,219	2,202	17
Paymasters and various	1,061	1,055	6
Veterinary surgeons	683	679	4
Armorers	1,018	1,011	7
Saddlers	97	93	4
Total noncombatants	5,078	5,040	38

RECAPITULATION.

	1905 (proposed).	1904.	Increase.
Officers	24,522	24,374	148
Noncommissioned officers and enlisted men	580,158	577,573	2,585
Noncombatants	5,078	5,040	38
Grand total	609,758	606,987	2,771

Composition of the General Staff (Budgetary).

PRUSSIA.

Chief of the general staff	1
Aids	2
Generalquartiermeister	1
Oberquartiermeister	3
Chiefs of section in the great general staff, or chiefs of the general staffs at general headquarters and in large fortresses	36
Captains and field officers	189
Railway commissioners:	
Field officers with rank and allowances of regimental commanders	3
Field officers with lesser rank	19
Captains, first class	3
Retired (pensionirte) officers, field officers or captains	5

SAXONY.

Chiefs of the central section, or chiefs of the general staff at general headquarters	3
Chief of section of land survey with rank and allowances of regimental commander	1
Captains and field officers	15
Railway commissioners, field officers	2

WURTTEMBERG.

Chief	1
Captain and field officers	4
Railway commissioners, field officers	2

RECRUITING STATISTICS, 1903.

The number of young men having attained the military age has increased to 473, 026. Adding to this number those postponed of 1902 (316,246), of 1901 (247,499), and of the previous classes (36,048), there are obtained 1,072,819 men as the total figure of resources of recruiting.

The following classification has been made:

Unfit for service	41, 828
Debarred from service	1, 167
Postponed, emigrated	601, 455
Incorporated in the land forces:	
Serving under arms (*a*)	203, 913
Serving without arms (*b*)	3, 670
Incorporated in the navy	7, 201
Assigned to the recruiting reserve:	
Of the army	79, 452
Of the navy	1, 320
Assigned to the first call of the landsturm	96, 375
Young men qualified, in excess	5, 960
Entered as volunteers:	
In the army (*c*)	[a] 28, 769
In the navy	[a] 1,709
Total	1, 072, 819

The number of young men having enlisted in the army under the military age amounts to 20,457.[a]

Adding this amount to those mentioned under the heads of *a*, *b*, and *c*, there is obtained a contingent total of 256,809 men, incorporated during the year 1903.

The resources from recruiting in 1903 (1,072,819) appear at first sight considerably below those of preceding years—1,610,741 in 1902 and 1,618,612 in 1901—but this diminution is only apparent; it arises from the different method by which the recruiting statistics for 1903 were made up.

For the preceding years, the returns from districts comprised all young men having attained the military age, born or residing in the district; consequently some young men might figure on several different lists.

---

[a] The one-year volunteers are included in these figures.

In 1903 the returns comprise only those registered who were born in the district or abroad. Besides, the defaulters who in 1902 were 129,728, no longer figure in recruiting statistics.

CHANGE OF ARTILLERY AND THE 4-GUN BATTERY.

The question with regard to the change of the present German artillery materiel into barrel-recoiling materiel, which has been decided upon in principle, and which is on the point of being carried out, is the cause of frequent discussions in the German press on the advisability of either retaining the 6-gun battery or of adopting that of 4 guns, as has already been done in France.

Generals Rhone and von Blume have vigorously taken up the cudgels for the 4-gun battery. The former observes that the only means of not inordinately increasing the number of artillery wagons, already so numerous, is to replace 2 guns by 2 ammunition wagons in each battery, which would have the effect of allotting 4 guns and 8 ammunition wagons to each battery, instead of 6 guns and 6 ammunition wagons as at present. The latter remarks that if it is admitted that the battle front of an army corps on the offensive is limited to 3,000 meters, the artillery consisting of 24 batteries of 6 guns would require 2,500 meters, leaving thus hardly any space entirely free for the infantry. On the other hand, with 24 batteries of 4 guns each, the artillery would not require a front of more than 1,500 meters, and the infantry would thus obtain the space necessary for its employment.—*Journal of the Royal United Service Institution.*

GERMAN MILITARY PROJECTS.

It is reported from Berlin that the Imperial Cabinet and the ministry of war have settled the general lines of the project of increase of the army, which was put off last year owing to the poor condition of the finances.

Last year the chief general staff demanded: The creation of two new army corps, the armament of field artillery with cannons of new model, and the constitution of a third battalion of the new regiments now having two.

These requests had to be put aside owing to the opposition of the Catholic members of the Reichstag, who have the last word in all increases of military forces.

Anyway, the Russo-Japanese war has allowed the giving up of the projected reenforcements of the First Corps (Konigsberg) and the constitution with them of third battalions for the new Metz and St. Avold regiments.

The sharpshooters are to have a machine-gun section. The field artillery will keep its present armament.

The present war has converted the adversaries of an additional increase of the fleet; therefore the credits asked for by the minister of marine for the construction of two new squadrons and several cruisers will doubtless be granted.

The Kolnische Volkszeitung, the organ of the Catholic group, speaks favorably of the credits, if the idea of increasing the peace effective by 20,000 men is given up. It is at present of 495,000 men, 80,985 noncommissioned officers, 29,292 officers, and 105,145 horses, without counting the Bavarian army.—*La France Militaire.*

THE GERMAN IMPERIAL MANEUVERS, 1904.

The principle feature of the German imperial maneuvers of this year was the joint participation of the army and navy. This is also the first instance where a large body of troops has been transported by sea and landed as a part of the exercises thereof.

The region of the maneuvers was the western portion of the Grand Duchy of Mecklenburg-Schwerin, in northern Germany. It lies between the stations of the engaging forces, is easily accessible by rail, and sufficient in extent to permit operations simulating war.

The preliminary exercises included the parade, inspection, and review of the two opposing corps by the Emperor near their home stations—the Guard Corps at Tempelhofer Feld, Berlin, on September 2, and the Ninth Corps at Altona on September 5. As constituent portions of the Ninth Corps, there were also present on the occasion mentioned cavalry division "A" and the landing corps from the active battle fleet commanded by Rear-Admiral Breusing. The strength of the landing corps was 3 divisions, the first and second each composed of 2 battalions, the third of a gun detachment of 7 half batteries and of 5 machine-gun companies.

From the Ninth Corps a composite brigade, the Thirty-seventh, consisting of the Seventy-eighth and Ninety-first Regiments of infantry, of a platoon of hussars, regiment No. 3, two batteries of the Sixty-second Regiment of field artillery, together with wireless telegraph apparatus, was detached and assembled at Travemünde on the same evening and embarked on board the second squadron of the battle fleet. The embarkation commenced in the afternoon between 4 and 5 o'clock and, being favored by a calm, was completed before dark. Boards bearing the names of the different vessels had been set up conspicuously along the shore and indicated the points of assembly for the different detachments of troops. From here boats rowed by sailors or towed in sets of three or four by pinnaces took them rapidly to their respective vessels without confusion.

The infantry was shipped and transported on coast-defense ships. The 12 guns and limbers of the artillery were lifted by cranes from the landing stages and lowered into ordinary lighters from the port of Hamburg. The horses were passed into the lighters over gangways covered high on the sides with canvas. Special pains were taken with straw paddings to protect the legs of the animals. They were then led down ramps to their improvised stalls.

The total time consumed in the full embarkation of 3,600 men, 170 horses, and 12 guns was 3 hours. The fleet and transports then proceeded eastward along the coast to Wohlenburger Wiek. After the best landing place had been sought out by the torpedo boats the disembarkation commenced, the sailors and soldiers jumping into the shallow sea and wading ashore. The unloading of horses and guns proceeded simultaneously. The horses were led into the water down sloping ramps reaching bottom and ridden or led ashore. The guns, limbers, and carriages were lowered by derricks from the lighters and pulled ashore by hand. The saddlery was packed in sacks and together with ammunition was carried dry in boats to land. The saddlery sacks were carefully numbered, a system which permitted their safe return to the proper troops. The two companies of pioneers commenced at once and soon constructed a pier extending 100 meters into the water. The composition of the two opposing forces is shown in Plates I and II.

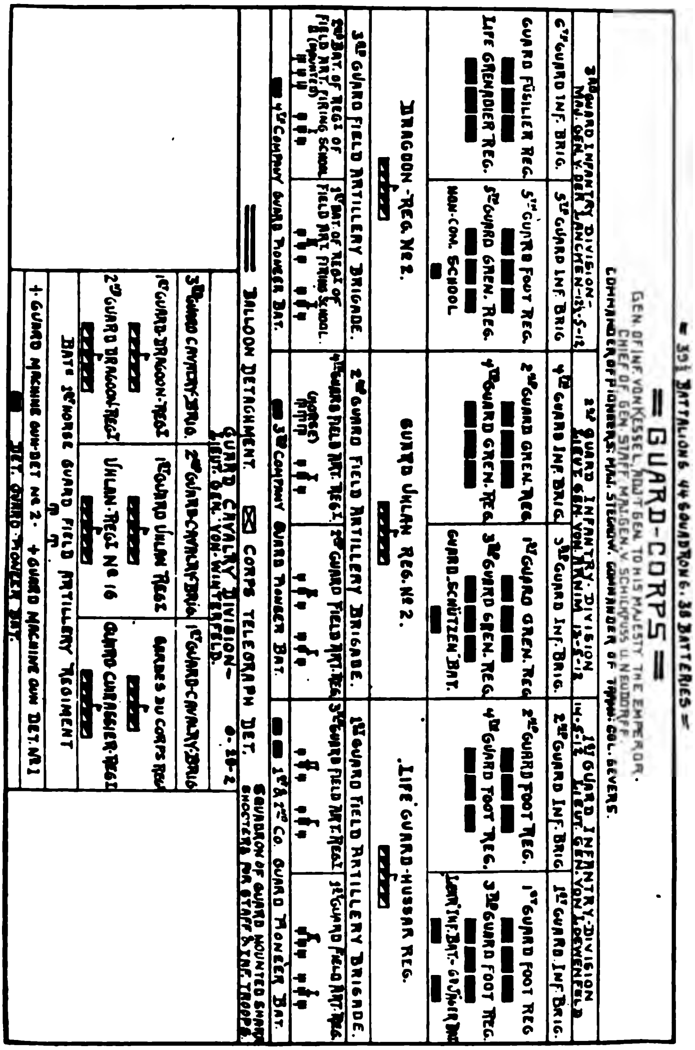

= 39½ BATTALIONS 44 SQUADRONS. 38 BATTERIES =
= GUARD-CORPS =
GEN. OF INF. VON KESSEL, ADJT. GEN. TO HIS MAJESTY THE EMPEROR.
CHIEF OF GEN. STAFF MAJ. GEN. V. SCHICKFUSS U. NEUDORFF.
COMMANDER OF PIONEERS: MAJ. STEGMANN. COMMANDER OF TRAIN: COL. SEVERS.
3RD GUARD INFANTRY DIVISION - MAJ. GEN. V. DER LANCKEN - 13-5-12
6TH GUARD INF. BRIG.
GUARD FÜSILIER REG.
LIFE GRENADIER REG.
5TH GUARD INF. BRIG.
5TH GUARD FOOT REG.
5TH GUARD GREN. REG.
NON-COM. SCHOOL
2ND GUARD INFANTRY DIVISION - LIEUT. GEN. VON ARNIM 12-5-12
4TH GUARD INF. BRIG.
2ND GUARD GREN. REG.
4TH GUARD GREN. REG.
3RD GUARD INF. BRIG.
1ST GUARD GREN. REG.
3RD GUARD GREN. REG.
GUARD SCHÜTZEN BAT.
1ST GUARD INFANTRY DIVISION - LIEUT. GEN. VON LOEWENFELD 14-5-12
2ND GUARD INF. BRIG.
2ND GUARD FOOT REG.
4TH GUARD FOOT REG.
1ST GUARD INF. BRIG.
1ST GUARD FOOT REG.
3RD GUARD FOOT REG.
LEHR INF. BAT. - GD. JÄGER BAT.
DRAGOON-REG. NO 2.
GUARD UHLAN REG. NO 2.
LIFE GUARD-HUSSAR REG.
3RD GUARD FIELD ARTILLERY BRIGADE.
2ND BAT. OF REGT OF FIELD ART. FIRING SCHOOL
8 (MOUNTED)
1ST BAT. OF REGT OF FIELD ART. FIRING SCHOOL.
2ND GUARD FIELD ARTILLERY BRIGADE.
4TH GUARD FIELD ART. REGT
(HORSE)
2ND GUARD FIELD ART. REGT
1ST GUARD FIELD ARTILLERY BRIGADE.
3RD GUARD FIELD ART. REGT
1ST GUARD FIELD ART. REG.
4TH COMPANY GUARD PIONEER BAT.
3RD COMPANY GUARD PIONEER BAT.
1ST & 2ND CO. GUARD PIONEER BAT.
BALLOON DETACHMENT.
CORPS TELEGRAPH DET.
SQUADRON OF GUARD MOUNTED SHARPSHOOTERS FOR STAFF & INF. TROOPS.
GUARD CAVALRY DIVISION - LIEUT. GEN. VON WINTERFELD. 0-28-2
3RD GUARD CAVALRY BRIG.
1ST GUARD DRAGOON-REGT
2ND GUARD DRAGOON REGT
2ND GUARD CAVALRY BRIG.
1ST GUARD UHLAN REGT
UHLAN REGT NO 16
1ST GUARD CAVALRY BRIG.
GARDES DU CORPS REG.
GUARD CUIRASSIER REGT
BAT. 1ST HORSE GUARD FIELD ARTILLERY REGIMENT
4 GUARD MACHINE GUN DET. NO 2 - 4 GUARD MACHINE GUN DET. NO 1
DET. GUARD PIONEER BAT.

Plate I.

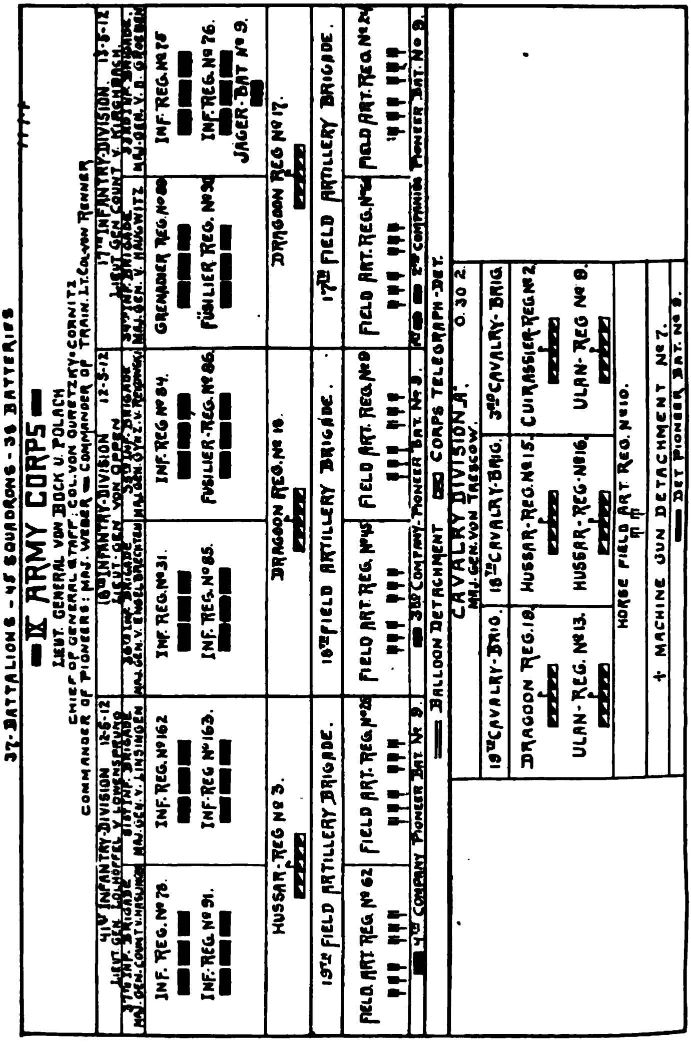


Plate II.

REMARKS ON MANEUVERS.

It was observed at the maneuvers that the known infantry attack was not in any degree departed from. A change was scarcely to be expected at the period of these maneuvers when all eyes were turned to the east where the Japanese were winning the victory at Liauyang after Prussian methods and in Prussian fashion.

On this subject the Kölnische Zeitung says:

"This does not prove that this style of infantry attack—the Prussian style—is the only correct one. A standard attack for infantry is not determined upon; the conditions for the time being in real war will decide in any particular instance how the tactical attack of the infantry is to be conducted with sure view to success, but it is in any case to be observed that the leaders of our army are striving to utilize and test the usefulness of the experiences of the bloody war in East Asia by transforming them, so far as they appear suitable, to our own conditions.

"The exceedingly skillful maneuvering and cooperation of artillery and infantry showed that our higher troop leaders have completely understood the correct employment of each separate arm of the service. * * * This may be attributed in no small measure to attendance of the general officers at the firing schools for artillery and infantry."

On the same subject of infantry attack, Maj. Gen. Sir Alfred E. Turner says, in the Empire Review:

"Over and over again the Japanese have advanced shoulder to shoulder against and assaulted positions occupied by a brave and stubborn enemy; time after time have they been beaten back, only to advance again, ultimately to succeed. * * * It is a pregnant fact that the Japanese army is modeled exactly on the lines of the German, and that the unequaled general staff of the German army is the prototype of the Japanese, which has excited the wonder and admiration of the world by its extraordinary capacity and success."

In conclusion, the German infantry drill regulations do not in any sense prescribe the choice of the method of attack, but it is a common observation at the maneuvers that in order to bring about a decision the lines are reinforced to density.

The cavalry (it would cease to be German if it did not) favored the mounted attack, and although there were instances not wanting, it was not to be drawn from its fancy.

The opinion holds in Germany that the mounted attack for good troops is a stage in advance of the dismounted, and the explanation heard of the frequent fighting on foot in American wars is that it is suited to our local conditions, where every man may be a good shot but is not an equally skillful sabreuer, riding in close formation.

The new cavalry bridge apparatus carried this year is said to have given satisfaction, and to be preferred to the folding boat. It was used over the smaller streams, including the Trave.

The new field signal lamp is a combination of the heliograph with an artificial light for signaling, and it is possible to pass from the one method to the other as soon as the sun disappears behind a cloud or reappears. A telescope attached to the heliograph is used for sighting the instruments. The flame, produced by burning a mixture of oxygen and acetylene gas, impinging upon thorium brings it to incandescence. The intensity of the light is 500 candlepower, and a system of lenses brings it to 80,000 candles. The apparatus is set up on a portable stand, capable of being turned in any direction. The optical axes of the heliograph, telescope, and field lamp arranged parallel to one another make it possible to sight both signaling instruments with the one telescope. The acetylene is generated in the usual way from calcium carbide and water in a special vessel. The oxygen is contained compressed in small steel cylinders, holding a supply sufficient to last several hours, and may be carried from the saddle. Under the ordinary conditions of field service, the instrument may be relied upon for communication for distances of 12 to 15 kilometers, and under the most favorable conditions of 50 kilometers and more.

As 8 cyclists are attached to each corps headquarters, and 115 to each infantry division, groups of wheelmen are frequently seen in the maneuver district. Their usefulness in the intelligence department is highly esteemed and encouraged. It is expected they will be valuable in reconnoitering.

The military motor cyclist now wears the ordinary leather "chauffeur" uniform, with goggles.

The excellent system followed in Germany should create a reserve of automobiles of a strictly military type, available in time of war. The development of military automobiles is the special work of the experimental department of the communication troops, which has made extensive trials with all the various types on the market and has evolved therefrom a more or less standardized car suited to military purposes. Inversely, this has reacted on the motor-car industry in general, and as the model defined for the army is found also to be admirably adapted to the needs of the public, giving, too, guaranty of efficiency and reliability, a great number of automobiles of a military pattern has been constructed and is in private ownership, forming a reserve naturally at the disposal of the Government in mobilization. In no case could the Government itself own the necessary number, on account of the expense connected therewith and the impossibility of keeping pace with the progress of invention.

Mounted patrols use carrier pigeons; the equipment with every two riders being four pigeons. The pigeons are carried in bags during the ride and transferred to a cage at a halt.

As is known, there are pigeon stations in all the German fortresses for intercommunication or for communication with the hinterland. The birds of the association of German societies of amateur pigeon fanciers are also available and trained for this service.

The latest transportable field stations of the wireless telegraph system are thus described: The two-wheeled power car contains one benzine motor of about 4 horsepower, coupled direct to an alternating current generator of 2.5 kilowatts capacity, including water circulating pump and an automatic water cooling apparatus, and device with disengaging clutch for hauling in of balloon. The two-wheeled apparatus car contains one complete transmitting and receiving device for two waves of the following range with kite or balloon: Two hundred kilometers with writer and 300 kilometers with hearer; or with three masts, each 15 meters in length, with writer 75 kilometers, with hearer 100 kilometers. The apparatus car contains also 2 kite and 2 balloon cables, each 200 meters in length, and 2 cable drums with crank and brake, attached to the cars on the outside. The two-wheeled implement car contains 4 gasometers of each 5 cubic meters capacity at a pressure of 120 atmospheres; 1 benzine tank, 2 kite balloons, 6 linen kites in 2 cases, tools and spare parts.

The three masts, each of about 12 to 15 meters in length, can be fastened together. Experiments are being made with an instrument that may be carried on a pack animal and operated at a distance of 20 kilometers.

The telephone apparatus issued to and carried by mounted patrols is suited for a short-distance service. The uninsulated steel wire may be laid at the rapid rate of 4 to 5 kilometers per hour from the horse and dropped directly on the ground or tossed over the branches of trees. It is one-half millimeter in diameter. Several kilometers may be carried without fatigue to the rider. The thinness of the wire makes the line very liable to breaks.

In seven and one-half hours, commencing at 5 o'clock p. m., September 15, the infantry (excepting only the troops from Wismar and Schwerin), the communication troops, etc., numbering in all nearly 51,000 men, 3,500 horses, and 400 vehicles, were assembled at the railroad stations of Wismar, Hornstorf, Kleinen, Bobitz, Plüschow, and Grevesmühlen, placed in 39 trains, and forwarded to their home garrisons. At the same time the regular traffic was maintained.—*M. I. D., 717-f.*

TACTICAL PROCEEDINGS ADOPTED IN THE LAST IMPERIAL MANEUVERS IN GERMANY.

In these maneuvers infantry was used according to the regulations and traditions of the past years—contact all along the front and violent pressure on and turning of the wing most dangerous for the retreat of the enemy. There was not the slightest trace of Boer tactics.

The greater or minor density of firing lines depended essentially on the circumstances of the engagements and of the ground. This, broken and uncertain, was well adapted to the employment of infantry and artillery, less to the use of cavalry. Preparatory engagements and fire attack predominated. Great use was made of machine guns at medium distances, in which their precision is greater than that of the rifle. The rifle is considered as an arm for short distances, beginning from 600 or 800 meters' limit, that the infantry must attempt to reach before opening fire, to avoid excessive waste of ammunition. This distance is reached by keeping under cover, or, if this is not possible, by advancing by rushes and crawling along the ground if necessary. As soon as the rounding the flank is noted the whole front is attacked, with the support of the artillery. which then does not fear to approach the object to be driven back.

The artillery was always employed in mass. The batteries were placed as much under cover as possible, so that the pieces, the muzzles of which barely emerged above the top, could hardly be seen. The artillery of the Ninth Corps, having one day neglected these precautions, was by the umpires declared out. The shrapnel is considered as the principal artillery projectile. It appears that the light field howitzers had no special duty. Anyway, artillery as a body was always ready to intervene to help and support the infantry.

The cavalry found this year fewer chances of taking part in engagements in mass than it did in the past; but judicious use was made of it in scouting and patrolling services.

The ground was but ill adapted to the concentration of large masses of cavalry, and army corps of this arm were not formed, as usual, by the union of two divisions. On the other hand, more than one regiment and brigade charge took place, with the object of checking a pressing attack or aiding masses strongly engaged. The cavalry telegraphists were largely employed in the exploration service. The cavalry bridges were not brought into use, on account of the conformation of the country.

Great use was made of the defensive organizations of the positions, and the pioneers cooperated in the work with the infantry. This organized numerous supporting points, even on the offensive.

The troops on the lines of communication were represented by telegraphists and aerostats. The first connected the different headquarters among themselves; the latter brought captive balloons into action and did excellent work as observers, and also gave a signaling balloon for the direction.—*Strassburger Post.*

GREECE.

REORGANIZATION OF THE ARMY AND THE ARMAMENT.

The Greek Chamber of Deputies has adopted a new military scheme, elaborated by the heir apparent, who is commander in chief of the army. According to this scheme the period of military service will be for 12 years, 2 of which will be spent with the colors. The contingent up to the present has been fixed at 11,000 men, of whom 6,000 were actually enrolled. This number has now been increased to 15,000 men, which, taking wastage into account, brings up the peace strength to about 28,000 men, and the war effective from 120,000 to 130,000 men.

The military forces are in peace time divided into 3 divisions, in time of war into 6, each consisting of 2 infantry brigades, 2 battalions of chasseurs, 1 artillery regiment, 1 cavalry regiment, 1 engineer battalion, 1 transport company, 1 field hospital, 1 ammunition park, with commissariat, etc.

The infantry in peace time will consist of 12 regiments of 3 battalions each, the third being a battalion cadre. These regiments are increased to 24 in war time; 6 battalions of chasseurs in peace, and 12 in war time. The artillery will consist in peace time of 3 field artillery regiments of 8 batteries of 6 guns. In war time each infantry division will receive a regiment of 4 batteries; in addition, in peace, as in war time, the Hellenic army will possess 6 mountain batteries and a heavy artillery brigade division of 3 batteries. The cavalry will consist of 3 regiments of 4 field squadrons and 2 squadron cadres, and the latter will in war time form 6 divisional squadrons. The technical troops will consist in peace time of 3 battalions, and in time of war of 6. The transport will consist in peace of 3 companies, and in war time of 6.

The war department has also in contemplation a reform of armament. It is proposed to replace the Gras 11-millimeter rifle by a new repeating rifle and to introduce 8-centimeter Krupp field guns. The models under consideration are, as regards rifles, the Krag-Jörgensen, the Mauser, and the Mannlicher, and, as regards guns, those of the Krupp, Ehrhardt, Skoda, Schneider, and Vickers systems. The reorganization should be completed in two years from 1905.—*Revue du Cercle Militaire.*

HOLLAND.

REARMAMENT OF THE FIELD ARTILLERY.

The Dutch Government has adopted for the new armament of its field artillery the Krupp gun with hydraulic brake, spring recuperator and shields.

The gun is similar to that already adopted by Switzerland. Its initial velocity is, however, a little greater than that of the Swiss model (1,700 instead of 1,590 foot-seconds), while the weight of the projectile is a little less (13.2 instead of 13.9 pounds).

The materiel ordered comprises 204 pieces and 408 caissons. In addition, 200 caissons destined for use in the ammunition parks will be obtained by the alteration of existing carriages still fit for service; this last operation, as well as the manufacture of a part of the ammunition will be carried on in the Dutch arsenals.

The total expense will reach 14,000,000 francs, a fifth of which will be spent at home.—*Bulletin de la presse.*

ITALY.

ITALY'S POSITION IN THE MEDITERRANEAN.

Italy in the Mediterranean. An essay of the former chief of the General Staff and well-known military writer, Pittaluga, treats once more, starting from most recent events, a life question of Italy—her part or rôle in the Mediterranean—and on account of the fact that it was written in French in the Revue d'Italie published in Rome, it demands special interest. The author starts from a series of simultaneous events from the first half of last year, Loubet's journey to Rome, the inspection of the Italian fleet, 44 ships at Naples, the presence of the English fleet of 110 ships in the Gulf of Degli, France; our Kaiser's visit to Southern Italy, newspaper reports of night maneuvers of Austrian ships in Italian waters, and finally the singular address of M. Pelletan in Terryville in Tunis which exactly in that day of Franco-Italian fraternization accentuated so strikingly the worth of Bizerta. "It constitutes a center for the union of those light craft, torpedo boats and submarines, rapid insects whose stings kills colossi, and in case of war gives the mastery of the whole Mediterranean and attaches to the French flag the deciding influence."[a]

Against Pelletan's concluding sentence Pittaluga interposes remonstrance. Of a mastery of the Mediterranean England alone can speak with her mastery of the gates Gibraltar and Suez-Ismalia, her positions of Valetta in Malta, Cypress, Rhodes, Alexandria, and Aden. Bizerta has significance only for the inner basin of the Mediterranean and in conjunction with Toulon, Ajaccio and Algiers secures to France the mastery in the western Mediterranean basin.

From that statement of Pelletan, which, in the festal excitement of Rome and Naples, possibly excited more attention in foreign lands than in Italy itself, is for Italy, according to Pittaluga, the hint of Bizerta as the sally port against Sicily, the weightiest thing. In a few hours those rapid French insects from Bizerta could take their flight to Porta Empedocle, Sciacca, Marsala, and Trapani. "These facts put Italy in such a condition of inferiority that it must be rectified, not out of mistrust, but from considerations of balance of power and of mutual respect." Sicily must be made secure. This can be effected by building a war harbor on the south and west coasts or upon the island Tavignana, and by carrying out the original plan of a fortified camp at Castrogiovanni. But this is not enough. Italy must, like the other Mediterranean powers, get a firm foothold on the African coast; the possession of Tripoli must not be pushed off upon the long bank, for England is beginning, utilizing the hazy boundary of Egypt on the west, to lay her hand upon the harbor of Tobruk, many kilometers broad and 10 to 12 meters deep, lying opposite Crete. But Tobruk is the necessary third member in an Italian system of fortifications—Sicily, Tarent, Tripoli. Its seizure by another power would be equivalent to annulling Italy's right to Tripoli, admitted by Europe. Without Tobruk Tripoli has hardly any value for Italy. In possession of Tobruk, however, and supported by Sicily, Spezia, and Maddalena, Italy is in position to maintain herself, at least defensively, in the western Mediterranean, and protected by Tarrent and Venice in the eastern Mediterranean. To secure these strategical positions must be the programme of a firm and constant Italian foreign policy for the first years of the new century.

---

[a] The building of Bizerta continues quietly and steadily. On December 4, 1904, the French Chamber with an imposing majority approved another 4-million francs for this purpose.

General Pittaluga observes that his deductions, leaving out of consideration Italy's historical position, are founded merely upon her geographical position. Naturally the policy desired by him must be supported by a corresponding development of the navy, which he now finds begun in a satisfactory way. In this limitation lies a weakness of his interesting study. The development of the Italian navy must, in one opinion, proceed quite differently if it is to justify extended tasks of this kind. We write 1905. What can be achieved during the next five years in this direction?

Unfortunately, the further question is not answered, What Italian Government is to assume the task of carrying out a policy which would aim equally against England and France?

Pittaluga's study does not touch upon what has actually been done for the defense of Sicily. Therefore an article on this subject in "Nord und Sud" is particularly welcome, and two facts from it may here find mention. The straits of Messina are secured on the island side by the fortified place Messina and on the mainland by a chain of forts, so that the strait has thus been transformed in a certain sense into a war harbor. The lack of modern armored covering, however, prejudices materially the work of the fortified place. But in any case the collective fortifications of the straits represent the only arrangements in Sicily that can make claim to being modern fortifications. The works of the other seaports are wholly antiquated, and in the reconstruction of the ancient strategical point, Castrogiovanni, in the center of the island, so far nothing has been done, probably for financial reasons.—*The International Review.*

LIGHT SAPPERS' UTENSILS.

Owing to the favorable results obtained in the trials carried out by the infantry school of fire at Parma, an experiment on a large scale with the implements in question was decided upon, and accordingly, in July, 1903, 60 small pointed spades and 200 small pickaxes were distributed to 5 regiments of infantry—bersaglieri and alpines—4 of which took part in the grand maneuvers, and experimented also with their new accouterments.

It was decided that the experiment should continue after the maneuvers, and that by the beginning of 1904 the authorities concerned should report to the ministry, making the necessary suggestions and proposals.

The implements gave favorable results, but the experiments showed that the proportion of light implements to be assigned to each company ought to be raised to 80 spades and from 12 to 15 pickaxes (instead of 37 and 13, respectively).

Regarding the way of carrying the implements—that is, if they were to be carried hanging to the belt or on the knapsack—no decision was arrived at, the suggestion being to await the results of the experiments with the new knapsack.

The expense for providing the number of implements recognized as necessary amounts to about 700,000 lire, and, considering the present condition of the extraordinary part of the war budget, the ministry has thought it best to postpone for the present the suggested alterations.

The reporter of the committee of finance, Senator Taverna, insists on a definite resolution being come to once for all, and is not satisfied with the financial reasons that the ministry gives to partly justify the delay.

Though it may be true that 700,000 lire are not a great sum, it must be remembered that still greater demands are continually being made on the war budget after its consolidation, to the extent of some millions, and that the extraordinary part is already much embarrassed by the many things exacted of it.

However, in the saving resulting from the change of the soldiers' equipment it would seem that the money could be found for the purchase of sappers' implements; therefore delay seems not only opportune but advisable, provided that it does not extend to an indefinite time.—*Popolo Romano.*

THE STRENGTH OF AN INFANTRY COMPANY IN TIME OF PEACE.

The war budget provides for the year 1904-5, which has just begun, an average of 207,162 men under arms, of which 180,520 are assigned to the infantry. Given this estimated force, what will be the maximum, minimum, and average strength of a company?

Senator Taverna's report gives the following details furnished by the minister of war:

On January 1, 1904, the force under arms in the infantry regiments was 90,737 men; 60,108 recruits of the 1883 class were assigned to the infantry, so that at present the total strength of those regiments can be calculated at about 150,845 men.

The force for the depots and staffs of these regiments reaches, according to the table of formation of the army, 9,824 men; therefore 141,021 remain at the disposal of the companies. As there are 1,371 companies, the strength can be obtained by dividing 141,021 by that number, which gives 102 men.

In reality, however, it will be somewhat larger, because in deducting from the total force of the regiment that of the depot and staff, these detachments have been considered as complete, while even in them the effective force is certainly smaller than the organic force, even though the specialities of service and the smaller size of the detachments themselves as compared to the companies does not allow of many vacancies.

If one considers that the new class is still in its first months of service and, therefore, is still liable to lose some men, the result will fall to about 100 men. This will be the maximum force, to which a minimum force of 59 men will correspond, and an average force of about 80 men.

It must be kept in mind, however, that this is a purely theoretical figure, because the maximum force, which ought to last six months, instead lasts somewhat less, so that the minimum force falls from 59 to 54 men, and the average force from 80 to 74.

In Germany the estimated force of a company is 135 men; in Russia, 111; in France, 100, and in Austria, 93; but the estimated force and that under arms in those countries is about the same all the year (which is not the case in Italy), as the leaving of one class is followed within from two to eight weeks by the joining of another.

Evidently this state of things makes the Italian army inferior, because if it is true that the strength of armies mainly consists in the force of its cadres, it is also true that to have good officers it is necessary that they should be used to taking the initiative and responsibilities characteristic of their rank. At present it seems rather difficult to train officers to initiative and responsibility with such a reduced strength. Such a long period of reduced forces is certainly not to the advantage of the troops themselves in their instruction. New weapons have increased the importance of instruction of the individual soldier, who can only in this way make the best use of perfected arms. These arms, in inexperienced hands, would do more harm than good because, being rather complicated, they are easily put out of order, and besides being capable of great rapidity of fire they can cause a great waste of ammunition. The deadly effect of the new arms obliges the troops in action to scatter in small groups or in slender lines to take the greatest possible advantage of the natural shelter that the ground affords.

Every man should know how to regulate his own fire, but at the same time must, at a signal from his superior, leave shelter to rush to the attack when taking the offensive, and when on the defensive come out in pursuit of the enemy already broken up and demoralized by the enemy's fire.

The experience of late wars has shown the absolute necessity of inculcating these principles in the men, and also that officers and men should be thoroughly in touch with each other. Only in this way can perfect confidence be established, and it does not seem possible to obtain these objects with troops reduced to such a degree for half a year.

The reduced strength of the companies presents drawbacks, even with regard to mobilization. More than this could be said, but to state a defect is not to remedy it, and here is where the Taverna report is defective.

Those who are in the habit of judging of institutions and situations superficially consider the simplifying of administrative methods and consequent reduction of personnel as a sure means of great economies, which could be used to improve the much-lamented state of the estimated force.

The honorable reporter of the war budget has not this illusion, because if it were possible to do away with one-third of the administrative personnel it would only result in an economy which would hardly be sufficient to increase by one month the maximum strength of the companies. According to the Honorable Taverna, considerable savings, which would go to the benefit of the troops, could be realized by the changing of the system regulating the soldier's uniform, by the institution of company depots for its distribution. This is a proposal which certainly deserves careful consideration, the system having been adopted with success in other armies, but it will never produce the eight and a half millions which are required by the war budget to bring the

average strength of our infantry companies on a par with the Austrian companies—which is the smallest of all other armies—and to reduce to only 4 months the minimum strength.

WAR ACCOUTERMENT OF THE SOLDIER.

The question of lightening the soldier's pack has been called special attention to in the Senate by the permanent financial committee, to which the administration of war had given the following information:

The reduction of the individual equipment for the soldier in time of war, till now suggested, has been determined as follows:

Abolishing the linen jacket in the list of clothes for the recalled men, who are in any case given the sweater (farsetto a maglia).

Reduction in the number of blacking brushes and boxes of blacking.

Lessening the number of gaiters by one pair.

Abolishing the shelter tent half and accessories for the noncommissioned officers of the foot troops.

Reduction of the number of tin cans for carrying meat, which were carried hanging from the belt or strapped to the knapsack.

Lessening the number of pairs of shoes by one for the mobilized troops and the substitution of a pair of barrack shoes which cost less. A model of the barrack shoes, which are to be of linen with rope soles, has already been prepared and is being experimented with by the alpine troops.

A model of a comfortable and hygienic field cap has also been prepared. It is to weigh 195 grams and is to substitute in camp, exercises, grand maneuvers, and war the "kepi" (310 grams), and perhaps even the alpines' hat, which would then be kept only for time of peace; its adoption, however, has not yet been definitely settled upon.

For the carrying of the pack a better distribution of the objects on the soldier's body has been considered, and, during the field exercises of 1903, seven regiments experimented with a knapsack unprovided with a cartridge box, with the bread bag hanging to it and the canteen placed on this bag. The cartridges were distributed partly in the cartridge pouch in packets and clips and partly in the cartridge cases of the reserve cartridges hanging from the belt—the first in front and the second behind—both held in place by straps, fastening behind.

Experiments gave good results for the knapsack, which, being lighter, caused less trouble to the soldier and allowed him greater freedom of movements and more ease when shooting in a prone position; but the system of carrying the cartridges was not found practical, as it caused great discomfort to the soldier by the pressure on his loins and abdomen of the various sets of cartridge cases which when full were absolutely rigid; so that it was decided to give this part of the accouterment more study.

Waterproof linen knapsacks are now in course of manufacture; they are cheaper than the leather and reduced in size in proportion to the reduction of the outfit, and they have no box for cartridges, which are instead distributed in the front cartridge cases and in two pockets, one on each side, of the bread bag, which hangs from the knapsack by means of straps from the shoulders, so as to balance the weight.

The bread bag, which can be transformed into a small knapsack, is made so as to contain the reserve rations, so that, should the soldier be obliged to abandon his knapsack, he still has his ammunitions and rations.

The new knapsack with these pockets will be experimented with during the coming field maneuvers, after which a definite conclusion will be arrived at regarding them.

MILITARY EXPENSES FROM 1886 TO 1904.

The following table shows the sums spent or appropriated by the army during the period beginning with the year 1886–87 and ending with the current year 1904–5.

The expenses for Africa are included in it, but not those of the National Target Shooting Association, as they were inscribed sometimes on the war budget and others on the budget of the interior.

Year.	Expenses.		Total.
	Ordinary.	Extraordinary.	
	Lire.[a]	*Lire.*[a]	*Lire.*[a]
1886-87	217,600,000	51,600,000	269,200,000
1888-89	240,600,000	75,900,000	316,500,000
1889-90	250,300,000	152,700,000	403,000,000
1890-91	257,800,000	47,600,000	305,400,000
1891-92	252,800,000	32,500,000	285,300,000
1892-93	243,200,000	18,000,000	231,200,000
1893-94	232,600,000	12,900,000	245,500,000
1894-95	230,800,000	14,500,000	245,300,000
1895-96	225,300,000	15,000,000	240,300,000
1896-97	219,600,000	127,450,000	347,050,000
1897-98	218,300,000	16,000,000	234,300,000
1898-99	230,400,000	15,600,000	246,000,000
1899-1900	230,500,000	16,000,000	246,500,000
1900-1901	230,500,000	16,000,000	246,500,000
1901-2	230,500,000	16,000,000	246,500,000
1902-3	230,500,000	16,000,000	246,500,000
1903-4	230,500,000	16,000,000	246,500,000
1904-5	230,500,000	16,000,000	246,500,000
Total	4,432,800.000	691,750,000	5,124,550,000

—*Popolo Romano.*

[a] The value of the lire is 19.3 cents.

NEW SCOUTING RULES FOR CAVALRY.

The new temporary rules on the scouting service, drawn up last year and amended this year, were tried on a large scale for the first time during the cavalry maneuvers held during the latter part of August, 1904. These rules are based on principles diametrically opposed to those heretofore followed regarding first engagements between two cavalries. They provide that cavalry on scouting service is to take no notice whatever of the enemy's cavalry, excepting in cases where the latter may place obstacles or attempt to hamper the gathering of exact news regarding the large bodies of troops which may be in rear of the exploring cavalry. According to the rules, the superiority of cavalry in scouting is determined by the quantity and value of the information it manages to obtain, rather than by the partial successes it may gain over the enemy's cavalry.

AGE LIMITS OF OFFICERS.

According to the interpretation of an article published In L' Italia Militare e Marina (No. 100), there exist in the Italian army beyond the maximum age limit, generals of divisions who are 65 years of age; generals of brigades who are 62; colonels, 58; lieutenant-colonels, 56; majors, 53; captains, 50; subaltern officers, 48; this without taking into account the minimum age in connection with the minimum limit of years in the service.

These minimum limits are:

	Limit of age.	Years of service.
	Years.	*Years.*
Generals of divisions	60	....
Generals of brigades	55	30
Superior officers and chiefs	52	....
Captains and subalterns	45	25

The law confers upon the King the authority to retire a chief or an officer before he may arrive at the age limit, but only when he may have had the years of service that are stated in the table described above.

For example, the Government may retire, against the will of the interested party, a lieutenant-colonel who may be 48 years of age and who may have had 30 years of service, but this can not be done with a lieutenant-colonel who may have the minimum age unless he shall have served 30 years in the army.

With the object of granting to a chief or meritorious officer the maximum retired pay, which is equal to four-fifths (in Germany three-fourths) of the pay to which he is entitled after having served 40 years, the Government has a law to the effect that he may be placed in the reserves.

The chief or other officer may remain in this position for eight years. If, for example, a colonel with 34 years of active service is granted retirement with the pay corresponding to the same and at the same time he passes into the reserves, after 6 years, which are counted as though spent in active service, the colonel will have 40 years of service and he may receive the maximum pay known to the law.—*Boletín Militar, December, 1904.*

JAPAN.

EQUIPMENT AND FOOD OF THE SOLDIER.

Summer kit.—In the neat blue parade uniform, jacket or tunic, plain flat brass buttons are used, but in the working kit, buttons are done away with as far as possible, fastenings being in nearly all instances carried out by means of flat hooks and eyes. The summer jacket and trousers are of khaki drill; the jacket is perfectly plain, and there are no buttons on any of the garments. A strip of white linen is issued to wind around the neck as a collar inside the tunic. The forage cap which goes with this uniform is a marvel of lightness. It has a detachable linen cover to be used in summer, from which hangs a linen screen to protect the neck. This screen being made in three parts—a center and two sides—allows the air to pass freely. For all uniforms the trousers are made like riding breeches, in that they end above the ankle, where they are made to fit tight to the limb, being fastened by tapes instead of buttons. Putties or gaiters must, of course, be worn with these. The ordinary greatcoat is of thick woolen cloth with bone buttons. It has a hood which can be drawn over the head. The free edges of the front of this, as well as of the winter garment, instead of being cut straight, slope outward below the waist, making the skirt of the coat lap over more completely below; it is thus prevented from gaping in walking, and the legs and knees are protected from rain. The front of the skirt can be buttoned back to allow free movement of the lower limbs for marching in dry weather. A mosquito-net "helmet," or head covering, issued to the Japanese soldier is made of green netting, stretched on two circles of cane, so as to make a long drum with one end knocked out, into which the head is passed. The two rings of cane are kept apart by a wire spring, which allows the drum to be flattened and buttoned down for carriage.

Winter kit.—The winter tunic and trousers are made plain, like the khaki suit, but are of good woolen cloth. The "cold-proof" winter overcoat is made of thick woolen cloth. It has a large collar covered with fur, which is of course inside when the collar is raised. From the middle of the edge of this collar a cotton cap or hood can be pulled out so as to cover the head, and over this can be worn the ample detached woolen "cold-proof" hood. Hanging by cords from the neck are large gloves or mittens—one division for all the fingers and one for the thumb. They can thus be thrown off when the hand is required for firing or any other purpose without being lost. A sheepskin waistcoat with the wool outside is also issued for severe weather. It fastens at one side. The underclothing consists of a cotton shirt and drawers for summer and a thick knitted woolen jersey, or sweater, and pants for winter. The ribbed woolen stockings are made without heels, and warm toe caps are issued in the coldest weather to wear over the stockings to prevent frostbite. These toe caps are made of a lamb's wool material like very thick lint, the soft surface being inside. A roll of fine striped flannel of very good quality and about a yard and a half long is issued to be wound round the abdomen, and takes the place of a cholera belt.

Boots.—In general appearance they resemble the boot issued to the British soldier, but on close inspection they are seen to be far superior. The leather of the uppers is good and reasonably soft; the sole is thinner than that of our army boot, and is thinned off at the waist, making the boot more flexible in marching. The flat of the sole is studded with iron hobnails, and the toe and the heel have brass plates. The boots weigh 3 pounds, as against the 4 pounds of our soldiers' boots. For the temporary use of men with sore feet the soft native shoe with grass sole, such as is used by the "rickshaw" men and the people generally in Japan, is served out.

Knapsack, haversack, and valise.—The knapsack is of leather, with the hair outside, its shape being maintained by a wooden frame. The khaki-colored hemp haversack is divided lengthwise to form two compartments, and resembles somewhat the haversack carried by our officers. A useful addition to the slings supporting it from the opposite shoulder is a short strap fixed in the center of the top of the sack, with a hook to fix on the waistbelt, and thus take off some of the weight from the sling. For carrying additional small articles of clothing the soldier has a long sack about 9 inches in width and 6 feet long, open at each end, and stitched across at its center, so as to make two bags. It is worn over one shoulder like a bandolier, the ends being tucked under the waistbelt at the opposite side. The water bottle, canteen, and mess tin are of aluminum, the first two being blackened outside; the canteen fits inside the mess tin like a tray. The rice ration is carried in the small grass box in front of the mess tin. The copper Chinese camp kettle is a very practical contrivance. It has double sides; the water poured into the outer jacket is heated by burning charcoal in a small stove in the center of the vessel, air being admitted by the lateral aperture near the bottom, through which also the ashes can be extracted. With this water can be boiled even in a gale, and the Japanese soldiers have realized its value in campaigning and use it very generally.

Food.—Of the various samples of food, the rice ration ready boiled, and the biscuits—consisting of wheat and rice flour, with a few grains of millet seed to prevent it from becoming too hard—are especially notable. Vegetables of various kinds—sliced potatoes, carrots, beans, sliced gourd, etc.—are thoroughly dried, thus insuring preservation and diminished weight. Tea and salt are both in solid cakes or cubes, and various meats and fish are in hermetically sealed tins. Even fodder for the horse is prepared, like the vegetables for the men, by drying.

Stretchers.—In addition to these articles of outfit and food, Miss McCaul has brought over two military stretchers, which are worth close and detailed inspection. The poles are of bamboo, and the weight of the stretcher complete (12 pounds) compares favorably with the much heavier stretcher in use in the British army. The supports or runners are particularly ingenious and simple—when the stretcher is folded they double on to the poles, but when it is opened their weight causes them to fall perpendicularly under the framework of the stretcher, and a loose metal ring then slides down and locks them in position. A metal frame at each end of the body of the stretcher supports a cover at a comfortable height above the patient. Each transverse comes in two in the center, and the cover frames or supports are hinged in the center for folding.—*Journal of the Royal United Service Institution.*

DETAILS OF THE JAPANESE SOLDIER.

An exhaustive letter from Tokyo, which the Cologne Gazette recently published, and from which we take the following data, gives some interesting details of the Japanese army:

On Wednesday afternoon there is no military duty. Excluding those on guard, every soldier can leave the barracks, wearing the extra caps provided by the regiment. From the smaller garrison places excursions are sometimes made, but in general the Jap soldier off duty does not care to go much. He prefers to sit around, since it is only students who make excursions into the country. In Tokyo, only the Guard Cavalry Regiment has its barracks within the city, close by the palace and park of the Mikado. All the other regiments are in the suburbs—some regiments, indeed, far outside. When the soldiers quartered in the suburbs are off duty, they go into the city, preferably to relatives to spend with them in their homes the whole day or afternoon. Those who have no relatives in Tokyo hire, in groups of from 10 to 20 men, a room in the vicinity of their barracks, in order to make themselves comfortable there and to live familiarly until the time to return to barracks, 8 p. m. at the latest. They drink sake (rice wine) and beer, not too much, for the drunken soldier is heavily punished.

The punishments of the soldier consist either in arrest or in standing upon a board or table till he confesses what he is suspected of; or in the omen (short *o*), a hard blow on the back administered by a subofficer. All soldiers are divided into three classes, which in general coincide with the three service years. Yet the passage into the next higher class depends upon capacity and leadership. The soldier who does well receives a two-week furlough in three years. Exceptions arise in case of death or other important events in the family. No permission is given to engage in gainful pursuits.

Uniforms are simple. There is only one kind of cavalry. The cavalryman wears red trousers and black coats. In summer the whole army is clad in khaki, which was introduced in place of the white clothing after the experiences of the war of 1894–95. As then the green-clad Chinese riders, mounted on white horses—they were the Manchurian cavalry regiments, which are said to be now, as irregular cavalry, fighting under Jap officers against the Russians—were clearly seen at great distances in the battle of Ping Yang and offered an excellent target, the Japs were convinced that they themselves, in their white summer clothes, would be observed at great ranges.

Turning and marching are diligently practiced. Marching is easy to the Jap from birth, even if he does not care to go much when off duty. But turning was, a little while ago, almost unknown in Japan, introduced at first unwillingly as a dangerous sport, and conducted for a long time by the subofficers rather crudely. But this has all improved so that the soldier to-day gladly turns. Night exercises are frequent. As in the navy, so in the army, they are held once a week. In all arms they pay great attention to target practice. Estimating distances are constantly practiced. Finally be it accentuated that the officers train the men to the utmost possible independence.

The one-year volunteer, who, as with us, wears the black and white band, pays on entry the entire amount for clothing, food, and, in the cavalry, for forage; is compelled for a time, possibly three months, to live in barracks; may later hire a private house. The authorization for one-year service is conditioned upon a graduation examination from the middle school.

On mobilization the whole army simplifies its uniform, already simple. The infantry officer takes off his black breast straps, which distinguish him from the privates and noncoms; the whole cavalry takes off its red, and the artillery its yellow straps. Thereby the officer can not be distinguished at a distance from the men and is not in special danger of becoming a special target of the enemy. In the warm season, as already mentioned, the whole army wears khaki. On mobilization each soldier receives a red woolen blanket and a second pair of leather shoes (cavalry and artillery long boots) which are strapped onto the knapsack. The roads in North Korea and Manchuria are few and bad. Straw sandals will not do there: and the soldier rarely has time to make them (making a single pair requires two to three hours), nor the necessary skill (for only country people are accustomed to this work), nor the necessary material (for only rice straw can be used). And to give them greater life (the sandal) they like to give them an admixture of cloth torn in strips. In his knapsack the soldier carries dried rice, some salted plums, and with it a bamboo tube with water. The company distributes, in addition, dried and pressed vegetables, dried fish, preserved meat, strongly compressed schoju (bean extract), as well as rice, wine, and cigarettes in small quantities. The new cooking utensils are yet an official secret. It is claimed that it is made of paper and made fireproof by a chemical process. It is carried in the knapsack.

The recently organized field post does its work satisfactorily, yet the letter exchanges are subject to a strict control of secrets. The mobilized soldier must not state to what regiment he belongs nor where he was embarked. He can write from the field, but only by omitting all statements of time and place. The letters from home addressed to him receive their detailed address from military boards.—*The International Review.*

THE JAPANESE FIELD GUN.

The field gun used by the Japanese in the present Russo-Japanese war, which has now already stood its "fire trial" in more than one battle, belongs, like the Japanese mountain gun, to the Arisaka system.

It is not exactly a rapid-fire gun, but must, like the German field gun, model 96, be numbered among the accelerated fire guns, since it requires, on account of the recoil of the entire carriage and the imperfect return of the barrel after firing, a relaying, and, besides, because the nature of the breech lock requires two movements for opening and closing it. In the Japanese drill regulations the rapidity of fire is given as

4 to 5 shots per minute for 1 gun, and 15 to 20 shots per minute for a battery of 6 guns.

The barrel is a jacketed barrel: that is, a gun barrel inclosed from muzzle to breech in a jacket shrunk on when heated and which carries on an overlaid band the trunnions, whose prolongations serve at the same time as axles. The drawn steel barrel is painted a zinc color. On the upper side of the rim of the breech is a flattened place, the pointing arc plane, and on the right side a vertical socket, which serves to receive the rear sight. This may be pushed up and down as desired and is fixed in any position desired by means of a screw. On the under rear side of the breechblock there are two horizontal eyes, between which is situated a corresponding eye of the breechblock, which is closed by means of a bolt. Thus the opening of the breech is effected to the rear and downward.

The breech mechanism consists of the breech frame, the block, which is hinged to the breech of the barrel by means of the above-mentioned bolt; of the breech screw, and breech crank, a lever with a horizontal and vertical arm. The opening of the breech is effected by means of two motions, one turn of the breech crank and the drawing of the breech frame and screw to the rear. By this means the frame assumes a horizontal position and is kept therein by means of a special support. The closing is effected in the reverse order. The vent is wedge shaped. The breech screw is bored through horizontally for receiving the firing mechanism; the firing mechanism consists of the firing pin with the striker, the firing-pin spring, and the trigger proper. The firing-pin spring is compressed by the closing of the breech; if the breech is not completely closed the firing is prevented. The case of the cartridge after firing is thrown out by an ejector, which is situated in the barrel and actuated by a rotating cog, when opening the breech.

The carriage consists of two flasks of pressed steel, whose upper edges are bent inward, exactly as in the case of our field gun. In the cheeks there are two recesses, corresponding to the trunnions, which are strengthened by special reenforcements for the purpose of receiving the latter; since the prolonged trunnions also form the axles of the carriage, the wheels are put on them from the outside. Their diameter is 1.4 meters, and the height of the trunnions is consequently 0.7 meter.

On the outside of the right carriage flask is the laying gear for obtaining the elevation. The traversing gear, like the one we have in our field artillery, is naturally impossible, since the trunnions, which are attached to the barrel, are axles besides.

The traveling brake is placed on hanging metal straps between the carriage flasks; the firing brake is situated on the rear part of the carriage, just in front of the pintle eye.

The firing brake, in connection with the wheel shoes, which take the place of the spade, serve to diminish the recoil and bring the gun forward after the recoil has ceased to act. Its arrangement is as follows: The inner side of the metal nave of the carriage wheels is provided with a groove, in which runs a galvanized wire rope, which is fastened by one end in this groove and by the other to a crosspiece of the buffer bolt. This crosspiece can move forward and backward in a slit in the carriage flasks, whereby the buffer—the so-called Belleville buffer—is compressed and released. The wheel shoes are hung on the axle by means of hanging straps and chains and consist of the sole, which grips the rim of the wheel, and two spade-shaped projections, directed downward, which on the recoil of the wheels dig into the ground.

When firing a shot, or rather immediately after, the process is as follows: At the beginning of the recoil the wheels turn and run up on the shoe brakes, pressing these into the ground. Simultaneously herewith the wire ropes of the firing brakes coil themselves on the wheel naves, whereby the crosspiece of the buffer bolt is carried forward, the Belleville spring compressed, and the recoil checked; or, what really takes place, the turning of the wheels is stopped. Through this the sliding backward of the carriage is prevented by the wheel shoes, which have been pressed into the ground. As soon as the strain on the ropes ceases the Belleville spring extends again and pushes the whole forward. The recoil amounts, on the average, to 0.5 meter. Although the gun is returned after firing. it does, however, not always run forward to the same place in which it stood when firing the shot. It must, therefore, be relaid for every succeeding shot.

The Japanese field gun fires the following projectiles: (*a*) A shrapnel with a double-action fuse; (*b*) a high-explosive shell with a base fuse.

The shrapnel is a case shrapnel with a screwed-on head. It has a length of 3.35 calibers and weighs 6 kilograms. The number of bullets, made of hard lead, is 234. After the bursting charge, which consists of black powder, is inserted, we have to deal with a tube shrapnel. The black powder has, as known, in this case the advantage that it produces when the shrapnel bursts a cloud of smoke, which facilitates essentially the observation, while it may besides, with a proper position of the points of burst, make really difficult the observation for the enemy's artillery fired on.

The high-explosive shell is made of steel, and has likewise a screwed-on head. In the base there is an opening for receiving the base fuse. The shell weighs 6.1 kilograms and has a length of 4.47 calibers. The bursting charge amounts to 800 grams of yellow powder (in all probability of melinite or picric acid).

Nomenclature.	Field gun.	Mountain gun.
Caliber	75 millimeters	75 millimeters.
Length of barrels	2.2 meters	1 meter.
Length of bore	1.8575 meters	0.8 meter.
Number of grooves	28	28.
Angle of twist	7°	7°.
Depth of grooves	0.75 millimeters	0.75 millimeter.
Diameter of the wheels	1.4 meters	1 meter.
Height of the trunnions	0.7 meter	0.5 meter.
Height of the line of sight	900 millimeters	700 millimeters.
Length of the line of sight	700 millimeters	400 millimeters.
Value of a graduation on the rear sight and pointing arc.	1/1000 of range	1/1000 of range.
Value of a graduation on the horizontal pointer.	8/1000 of range	8/1000 of range.
Weight of the shrapnel	6 kilograms	6 kilograms.
Weight of the bursting charge	92 grams	92 grams.
Number of bullets	234	234.
Weight of a bullet	10.7 grams	10.7 grams.
Diameter of a bullet	12.5 millimeters	12.5 millimeters.
Weight of the shell	6.1 kilograms	6.1 kilograms.
Weight of the bursting charge	800 grams	800 grams.
Initial velocity	457.5 meters	274.5 meters.
Width of wheel tracks	1,200 to 1,300 millimeters.	700 millimeters.
Weight of the barrel	316 kilograms	100 kilograms.
Weight of the breech block	16 kilograms	
Weight of the carriage with the barrel	846 kilograms	290 kilograms.
Limits of elevation	- 11° to +19°	−10° to +30°
Weight of the charge	450 grams	

The charge is placed in a brass cartridge case, which is carried separated from the projectile and is, according to the information received so far, not united with the projectile until loading.

Of laying gear there are at hand the rear sight and the pointing arc. The rear sight is a bar sight with an elevating screw. On the right side of the sight bar are placed a scale of distances from 200 to 6,200 meters and a degree scale graduated from 0° to 20°. The rear sight is inserted into the rear sight socket, situated on the right side of the barrel, and has already been mentioned above.

As is shown by the foregoing table, which contains the most important numerical data concerning the field and mountain gun, the mountain gun differs from the field gun in some points only. The length of the barrel is only 1 meter as against 2.2 meters in the case of the field gun; the carriage consists of two parts, which are telescoped in each other and fastened by means of a bolt; the Belleville springs are replaced by spiral springs, and the traveling brake is lacking.

The mountain gun is transported on four pack animals, in which case the two parts of the carriage are taken apart and packed on two pack animals. To each gun belongs, besides, still a fifth pack animal for the ammunition and equipment.—*M. I. D. 800–m.*

THE JAPANESE WAR BUDGET FOR 1905.

The budget as passed by the two Houses of the Imperial Diet on December 28, 1904, was published as follows in the Official Gazette of January 1, 1905:

Ordinary revenue.

	Yen.[a]
1. Tax	196,101,843
2. Stamp revenue	18,440,727
3. From Government undertakings	74,112,893
4. Miscellaneous receipts	2,209,870
5. Interest on deposits	4,290,833
6. Formosan bonds, redemption funds	1,742,595
Total ordinary revenue	296,898,761

---

[a] The value of the gold yen is 49.8 cents.

Extraordinary revenue.

	Yen.
1. Sale of Government property	745, 503
2. Miscellaneous receipts	3, 521, 052
3. Local payment to administrative expenses	833, 308
4. Appropriation from indemnity fund	72, 347
5. Appropriation from forestry fund	550, 967
6. Contributions	1, 600, 000
7. From account preceding fiscal year	112, 000
Total of extraordinary revenue	7, 435, 237
Grand total of revenue	304, 333, 998

Ordinary expenditures.

1. Imperial household expenses	3, 000, 000

FOREIGN OFFICE.

1. Department proper	164, 755
2. Legations and consulates abroad	2, 173. 708
Total	2, 338, 463

HOME AFFAIRS.

1. The Shrine of Ise	50, 000
2. All other shrines	223, 930
3. Department proper	330, 083
4. Sanitary laboratory	44, 298
5. Epidemic disease laboratory	167, 220
6. Metropolitan police board	234. 916
7. Hokkaide board of administration	631, 321
8. For *Fu* and *Ken*	7, 331, 273
9. Local expenses	228, 961
Total	9, 302, 002

FINANCE DEPARTMENT.

1. Department proper	247, 979
2. National debt	35, 883, 964
3. Pensions and annuities	8, 092, 781
4. Cabinet	224, 417
5. Privy council	132, 393
6. House of Peers	640, 534
7. House of Representatives	860, 335
8. Board of audit	170, 508
9. Administrative litigation court	45, 510
10. Custom-houses	696, 664
11. Collection of home taxes	3, 519, 409
12. Civil-service examinations	3, 475

	Yen.
13. Expenses for official reprimands	932
14. Expenses in financing	881, 268
15. Payment of deficits	1, 529, 552
16. Tobacco exports	262, 942
17. Camphor and camphor oil monoply	854, 409
18. Inspection of sake and soy manufacture	38, 929
19. Expenses of port of Yokohama	110, 307
20. Fund for war ships and torpedo boats	6, 599, 722
21. Reserve fund	2, 000, 000
Total	62, 796, 030

WAR OFFICE.

1. Department proper	254, 767
2. Military expenses	38, 653, 003
3. Gendarmes	580, 426
4. Contributions to Shrine of Yasukuni	7, 550
Total	39, 495, 746

NAVY DEPARTMENT.

1. Department proper	158, 078
2. Naval expenses	23, 797, 187
Total	23, 955, 265

DEPARTMENT OF JUSTICE.

1. Department proper	120, 333
2. Law courts	4, 879, 406
3. Local prisons	5, 178, 955
Total	10, 178, 694

DEPARTMENT OF EDUCATION.

1. Department proper	382, 816
2. Seismological investigation	19, 528
3. Geodetic committee	7, 924
4. Central meteorological observatory	44, 282
5. Latitude surveying office	6, 034
6. Examinations for physicians and apothecaries	71, 615
7. Schools and libraries	2, 720, 775
8. Salaries of normal school directors	65, 251
9. Elementary education, State aid	1, 000, 000
10. Practical education encouragement	320, 000
Total	4, 638, 225

DEPARTMENT OF AGRICULTURE AND COMMERCE.

	Yen.
1. Department proper	315,926
2. Monopoly bureau	74,530
3. Forestry office	1,117,085
4. Mining inspection office	163,974
5. Experimental farms	172,678
6. Fisheries school	68,341
7. Sericultural school	98,389
8. Silk conditioning houses	53,087
9. Stud farms	307,544
10. Improvement of cattle breeding	79,789
11. Industrial laboratory	39,242
12. Inspection expenses	10,721
13. Subsidies	212,200
14. Matting inspection office	30,119
Total	2,743,625

DEPARTMENT OF COMMUNICATIONS.

1. Department proper	575,884
2. Communications	18,409,457
3. Nautical signals	304,932
4. Ships' crews	157,389
5. Mercantile marine school	117,431
6. Hokkaide railway undertakings	1,047,679
Total	20,612,772
Grand total ordinary expenditures	179,060,822

Extraordinary expenditures.

FOREIGN DEPARTMENT.

1. Repairs	$21,625
2. Legation and consulate removal expenses	4,000
Total	25,625

HOME DEPARTMENT.

1. Subsidies	1,065,047
2. Civil engineering work	1,165,544
3. Construction and repairs	228,128
4. Office of the Shrine of Ise	80,530
5. Tree planting in Ogasawara Islands	5,288
6. Pharmacy investigation expenses	6,191
7. Hokkaide local expenses	520,000
8. Hokkaide development expenses	148,753
Total	3,219,481

FINANCE DEPARTMENT.

	Yen.
1. Subsidies	794, 715
2. Issue of public loan bonds	30, 040
3. Construction and repairs	69, 156
4. Investigation of capitalized pension bonds	40, 207
5. Principal and interest on Chinese bonds	3, 066, 636
6. Compilation of census statistics	5, 384
7. Reserve	1, 300, 000
8. Capitalized pension bonds	500, 000
Total	5, 806, 138

WAR DEPARTMENT.

1. Fort construction	406, 594
2. Construction and repairs	66, 000
3. Survey bureau expenses	140, 503
4. Initial equipment	327, 925
5. Suppression of Formosan banditti	20, 000
6. Compilation of war record	45, 934
7. Special allotment	12, 771
Total	1, 019, 727

NAVY DEPARTMENT.

1. Construction and repairs	35, 800
2. Special allotment for construction and repairs	40, 784
3. Naval expansion	72, 347
4. Temporary construction bureau	16, 450
5. Compilation of charts	7, 343
6. Kure arsenal extension	1, 484, 750
7. Naval construction store fund	8, 547, 227
Total	10, 204, 701

DEPARTMENT OF JUSTICE.

1. Construction and repairs	65, 221

DEPARTMENT OF EDUCATION.

1. Construction and repairs	167, 550
2. Equipment	8, 900
3. New medical college	137, 986
4. New Second Higher Normal School	39, 662
5. New Third Higher Commercial School	23, 000
6. New Fourth Higher Industrial School	24, 000
7. New Imperial Library	20, 060
8. Histographical compilation	20, 464
9. Extraordinary school expense	24, 809

	Yen.
10. Extraordinary surveying expense	8,000
11. Teachers' schools	30,000
12. Expense for Chinese students	14,880
Total	519,311

DEPARTMENT OF AGRICULTURE AND COMMERCE.

1. Foreign trade extension expense	72,000
2. Establishment of metal foundry	1,599,840
3. Encouragement of ocean fisheries	57,772
4. Subsidies	55,000
5. Construction and repairs	52,500
6. State forestry undertakings	550,967
7. Education inspection	7,640
8. Improvement of horses	16,171
9. St. Louis Exposition	13,368
10. Metal foundry fund	1,000,000
11 Inspection of fisheries	29,639
12. State forestry work	276,904
Total	3,731,855

DEPARTMENT OF COMMUNICATIONS.

1. Subsidies	4,738,962
2. Telegraph and telephone construction	200,000
3. Construction and repairs of nautical signals	1,078
4. Construction repairing	110,807
5. Improvement of Government railways	250,133
6. Railway construction expense	1,353,554
7. Hokkaide railway construction	217,021
Total	6,871,555
Grand total of extraordinary expenditures	31,463,614
Grand total of ordinary and extraordinary expenditures	210,524,436

RIFLES AND FIELD GUNS.

The Srefleurs Militärische Zeitschrift publishes the following details with regard to the quantity of war materiel (rifles and guns) which the Japanese army can dispose of:

Rifles.—The number of the 1897 model rifles was, at the beginning of 1903, of 280,000 rifles—that is as many as were necessary to equip the army of the first line and the reserve troops.

This rifle—Meiji model—is of the 6.5-millimeter caliber;

it has a 5-cartridge clip; it weighs, with bayonet dagger, 4.9 kilograms, and has an initial velocity of 725 meters.

As the two Jananese arsenals could turn out from 900 to 1,000 of these rifles a day, so Japan could now have about 400,000 of them—that is, enough to arm the territorial army also. But it appears that this has not been done, as the Russian surgeons have noted that some wounds were made by the old 7.5-millimeter rifle. This model is the Mourata repetition model, with 8-cartridge clip, weighing, with bayonet dagger, 4.5 kilograms, and of the initial velocity of 610 meters. There were 500,000 of these rifles in existence, and the depots and territorial troops must have had them.

Besides, Japan still possesses in old models 100,000 11-millimeter Mouratas, 150,000 Peabodys, and 50,000 Remingtons.

Guns.—At the beginning of 1903 there were in existence of the 1898 Ariska model, 7.5-centimeter accelerated fire without shields, 620 field pieces, and 360 mountain pieces—that is, a total of 980 pieces.

In the spring of last year 50 field guns and 50 mountain guns were added to these, so that the number of pieces reached 1,080; which number must certainly have been increased since.

The needs of the army of the first line required 702 pieces; those of the reserve, 78; the depots, 114; a total of 894 pieces. Therefore only 186 pieces of the more recent model remained for the territorial troops, while they really need 312. It is therefore probable that at least part of the territorial troops is still armed with guns of the oldest model.

THE JAPANESE ARTILLERY.

It was not alone the Russian diplomatists who were surprised at the suddenness of the outbreak of the present war; the army was not ready in any respect for this campaign. The Russian artillery especially was undergoing one of those phases of change of armament which can not be undertaken without peril when a crisis is imminent.

The readers of La France Militaire are already acquainted with the respective situations of the belligerents caused by the conditions of their artillery. The Russian piece, model 1900, had not yet replaced the older armament in all the corps, but it is certain that the batteries of the extreme Orient were equipped with it. This gave a technical superiority to the Russian artillery over that of the Japanese.

But in war in a broken country, such as that from the bank of the river Yalu up to Moukden, the Japanese took advantage of rapidity and facility of movement made possible by their strong organization and their mountain artillery.

Considered in the abstract, the mountain piece is inferior to the field piece. But in the miry soil of Manchuria, on the frontier of Korea, among the mountains of the south, bristling with obstacles, impassable for heavy pieces of large caliber, the lightness of the mountain gun was a precious advantage, compensating for its faults of structure and range. With a power theoretically less, the practical advantage was greater.

In artillery tactics the Japanese were brilliantly successful, especially in the beginning of the campaign.

It has been maintained that in this success could be detected the action and result of certain contributory conditions, and recently a Russian officer returning from the Far East declared that the effectiveness of the Japanese fire was due to the value of their optical instruments. But it seems that aside from these secondary causes there is one reason more essential. In the instruction of the artillery the Japanese general staff laid particular stress on the choice of position.

In the regulations for the field artillery fire, which were partially inspired by the instructions of the 19th of August for the German field artillery fire, and which were approved by the Japanese minister of war in March, 1902, a whole chapter is devoted to this question. At all events this goes to show how fertile for the Japanese in regulations and military organizations was the period between the Chinese expedition of 1900–1901 and the Russo-Japanese war, and which, in fact, was a phase of the minute preparation for the present war.

The citation of the text itself, rather than of extraets, will be of value in this study.

The choice of position depends upon topographic conditions. In every case, in order that a position be advantageous, it is necessary that the following conditions be fulfilled:

First. It is necessary that the position offer a good field of fire—as large as possible.

Second. The terrain separating the position of the hostile forces should be entirely open.

Third. It is necessary that the position itself should not be contracted, but should have a sufficient width and depth.

Fourth. The front of the position should be perpendicular to the direction of fire.

Fifth. It is necessary that the soil of the position should offer great resistance.

Sixth. The occupation of the position should not be surrounded by great difficulties.

Seventh. The resupply of ammunition should be effected easily.

Eighth. It is essential, finally, that the position offer protection against the fire of the enemy, as well to the batteries themselves as to the ammunition columns and the train.

It is, in reality, extremely difficult and many times impossible to find a position combining all these conditions. On this account it is that the opportunity of striking a decisive blow at the enemy from any position whatever should not be sacrificed to the search for such a perfect position.

It is therefore best to make the choice of a position dependent upon the conditions of the engagement and especially upon the dimensions and nature of the objective and upon the disposition of one's own troops.

All these conditions, upon which the choice of a position depend, give great significance to the minute study of the terrain, and it is extremely important to make a reconnoissance beforehand.

It is also necessary at the same time to take all possible measures to conceal this reconnoissance, for it is necessary that the enemy should not know or even have a suspicion of the positions intended for our batteries.

It is for this reason that the order is given to make these reconnoissances not only by detachments of cavalry but also by the infantry.

When important units are under consideration, one part of the artillery places itself in advance of the main position and entrenches itself in a masked terrain (artillery advance guard).

To each battery of 6 pieces should be given an emplacement not less than 40 meters and not more than 100 meters. The intervals between the batteries vary from 20 to 40 meters.

It would seem that the Japanese general staff, in elaborating this theory of positions, wished to leave nothing to choice; these precise precepts resemble commands. And, nevertheless, it is recognized that any method, however rational, should admit of adaptation to circumstances of time and place and that no rigid doctrine should suppress individual initiative and freedom of judgment. The selection of a perfect and ideal position may serve as the theme of a maneuver, but on the field of battle the theoretical perfection of a movement should not be regarded to the neglect of practical contingent results, or, as the Japanese instruction expresses it "the opportunity to deal, from any position whatever, a decisive blow to the enemy."—*La France Militaire.*

THE USE OF ARTILLERY BY THE JAPANESE.

The Japanese profit very skillfully by all the advantages offered by the artillery, chiefly by the hidden positions and the concentration of the fire. The hidden positions, with which our artillerists have practically made first acquaintance at the beginning of the campaign, have rendered good services to our enemies and have long been a stumbling-block for us. Being accustomed to high-artillery positions, not finding the disposition of the Japanese batteries, some of our commanders have much advanced their artillery, which was very profitable to the enemy, as it annulled the advantage of 1 verst of the range of our battery against the Japanese, which, nevertheless, remained invisible. According to the principles of the Japanese fire tactics, their artillery formed the so-called "great battery," concentrating the fire, from the very beginning of the fight, on the enemy's position in order to gain at once, not only material, but also moral advantage. Lieutenant-Colonel Vineken, of the general staff, an expert of Japanese tactics, states that, for instance, under the mountain Shautanpoo they concentrated 180 infantry and 18 cavalry guns; under Dashichao a detachment of Maxim guns was even added. But such mode of action is not liked by many of our directors of battle. Lientenant-Colonel Paschenko, a well-known connoisseur and practical artillerist, states in one of his articles in the Manchurian Viestnik No. 137:

"The hidden positions continue to rouse some doubts in the infantry commanders—not artillerists, it is true—who are not well satisfied with such positions. They say: 'We want only such artillery as is able to fire from any position to where I shall order the guns, which would always be directly behind its infantry, and not 2 to 3 versts behind it, etc.'"

Such commanders can not and will not understand that nowadays the quick-firing artillery is a machine which requires knowledge and direction, management mechanically by means of telephones, telegraphs, and not by means of signalmen. One of the commanders said: "You are a coward," when one of the battery commanders reported to him that the position chosen was "unsatisfactory, impossible, that it had to be removed 2 to 3 versts back." As an artillerist Pashchenko admits that the commanders do not know the principles of the quick-firing artillery, and ascribe it exclusively to generals who are nonartillerists. He takes the part of his own arm, but he is not quite right; he does not wish to acknowledge that the artillery generals are also not always at their height; for instance, one of the chiefs of the corps artillery placed his battery on hills, hillocks, and such other elevations, i. e., on the palm of the Japanese, because he does not admit hidden positions, and declared that the artillery is only a frightening element.

Further, we ought to compare how differently we and the Japanese understand the artillery reserve.

Whereas the Japanese move forward to the battle line their whole effective artillery, without reserves, considering that the artillery reserve are the parks and shells and an uninterrupted supply of the latter, we do just the reverse, leaving in the reserve fresh batteries, and, moreover, so far off that it is very difficult to attract them in the necessary time. Such was the case on October 1–2. A severe battle on the Shakhe. We became feeble. After the division of Smolensky the Third Brigade perished. The Division remained without artillery, and at the same time, in Mukden, 30 versts behind, were four fresh untouched batteries, with a full amount of ammunition.

The principle of the mutual aid is also differently considered by us. Whereas the Japanese profess it as an unmistaken theory, we are guided by the question, Do they belong to us or not? During the Laoyan battle the artillery of the "XX" Corps was out of ammunition; only two rounds were left per gun. An orderly gallops to the commander of the next corps, which has not spent a single cartridge out of its parks. "Excellency, aid us; we have no more cartridges." The General got angry. "You are not of my corps; I am not obliged; we may ourselves remain without cartridges." They were given only thanks to orders of the chief of the corps.

Further, where are our parks placed? At a distance of 12 to 16 versts. And nobody seems to think that the modern artillery can spend its whole supply in some 2 hours and remain whole hours without any supply. Thus it was on July 18 in the detachment of General Mischenko, when, according to orders of the respective authorities, the parks remained 12 versts behind the line of the ammunition carts—moreover, separated by a difficult pass—although they ought to have been at a distance of 6 to 7 versts from the line of the fire. It is most probable that many persons understand this inconsistency, but can not change it.—*Novœ Vremya, January 22/February 4, 1905.*

DAMAGE TO JAPANESE VESSELS IN BATTLE OF AUGUST 10, 1904.

It now appears that the *Mikasa* did not have a plate knocked out of her, as first reported. On the other hand, she was hit very frequently, indeed, and a correspondent who had the good fortune to see her just after the battle tells us that she looked much like the *Belleisle* after her battering by the *Majestic* some years ago. The Russians seem to have got her in all her tender places. On the other hand, no other Japanese battle ships were hurt, and had but a hit apiece.—*The Engineer.*

NETHERLANDS.

THE NEW FIELD GUN.

The Netherlands Government has adopted, for its new field artillery armament, the Krupp gun with hydraulic brake, spring recuperator, and shields. The gun selected is similar to the one already ordered by the Swiss Government, but has a slightly higher initial velocity, viz, 500 meters instead of 485 meters; on the other hand, the weight of the projectile is less, being 6 kilograms instead of 6.35. The materiel ordered consists of 204 guns and 408 wagons. Further, 200 ammunition wagons for parks will be obtained by transforming the existing serviceable wagons; the latter, as well as the manufacture of a portion of the ammunition, will be carried out by the home workshops. The total expenditure will amount to 14,000,000 francs, about one-fifth of which will be spent in the national industries.—*United Service Magazine.*

PORTUGAL.

NEW FIELD GUNS.

In accordance with the advice of the artillery experimental commission, the Portuguese Government have recently placed a contract with the Schneider firm for the supply of 36 quick-firing field batteries, of 4 guns and 8 ammunition wagons, or altogether 144 guns and 288 ammunition wagons; 2 batteries must be delivered by the 9th of December next, 12 by the 9th of May, 1905, and 22 by the 9th of May, 1906. Each battery is to be composed of 4 guns, with gun carriages, and a supply of 1,000 rounds, 800 of which are shrapnel and 200 common shell, per battery.—*United Service Magazine.*

ROUMANIA.

NEW FIELD GUNS.

The Roumanian Government has recently ordered from the Krupp firm 300 quick-firing guns of the 1904 model, decided upon by the artillery experimental commission, 900 ammunition wagons, 75 forges, and 75 battery wagons, 300 shrapnel and 200 common shell per gun. The field artillery, which at present consists of 64 batteries of 6 guns, or 384 guns altogether, will in future consist of 75 batteries of 4 guns each. The Krupp material should be delivered with a maximum delay of 2½ years.—*United Service Magazine.*

RUSSIA.

ORGANIZATION OF MACHINE-GUN COMPANIES IN 1904.

In 1901 the Russians organized for a term of three years, five companies of machine guns, which were assigned to infantry divisions, and a brigade of chasseurs. At the completion of the experiment an Imperial order of September 13 (26), 1904, fixed the organization of these companies. We give a résumé of this organization below:

Machine-gun companies are divided into field and mountain. The former are made up of 8 Maxim guns, caliber 7.6 millimeters (0.30″), like the Russian rifle, with carriage and two-horse limber and 8 one-horse caissons.

The mountain companies have likewise 8 Maxims, but they are carried on pack horses. The ammunition is carried by 8 pack horses and 8 one-horse caissons.

In time of peace the companies have horses for only 4 guns, with 4 pack horses in the mountain companies.

The gun detachment consists of 1 noncommissioned officer, 1 gunner (Gefreite), and 2 cannoneers.

The allowance of ammunition is not given; it used to consist of 5,850 cartridges per piece in 13 belts of 450 each, of which 3 belts were carried in the limber and 10 in the caisson.

The reserve train of each company consists of 9 one-horse wagons, of which 2 carry spare parts; 1 is the forge for the horses and matériel, 1 carries officers' baggage, 5 are ration and baggage wagons for the men, with 1 two-horse field kitchen.

The machine-gun companies are attached to infantry divisions or to brigades of chasseurs. They take the number of their division or brigade, and belong, for purposes of administration and preparation for war, to one of the regiments of the division—preferably to one which is stationed near the headquarters of the division—and are placed under the orders of the colonel commanding the regiment, without forming part of any battalion.

The captains of the machine-gun companies, nominated by the division commanders from among the candidates that have shown the most familiarity with target practice, or from the most deserving company commanders, are designated in general orders. The other officers are selected by the division commander from the regiments under his command.

Each company is entitled to a Feldwebel (sergeant) and two reenlisted noncommissioned officers.

The noncommissioned officers who are candidates for machine-gun companies form part of the special instruction detachment of the regiment.

Recruits are selected from those assigned to the artillery. They must have excellent eyesight and a vigorous constitution, and know how to read and write.

The remount service is the same as that of the artillery. The administration of the machine-gun companies is the same as that of the other companies of the regiment; they take part in all regimental drills and instruction. They may be sent to a target range for their machine-gun practice.

The following tables give the organization, in detail, of the personnel, material, and animals of a machine-gun company, beginning with the year 1904:

Personnel of a machine gun company (1904).

	Field company		Mountain company.	
	War.	Peace.	War.	Peace.
OFFICERS.				
Company commander (captain or lieutenant-colonel)	1	1	1	1
Officers	4	3	4	3
ENLISTED MEN (COMBATANTS).				
Feldwebel (sergeant)	1	1	1	1
Noncommissioned officers.				
Chiefs of section	8	8	8	8
Chiefs of caisson	1	....	1	....
Armorer	1	1	1	1
Trumpeters	2	1	2	1
Cannoneers assigned—				
To the guns	24	24	24	24
To the ammunition packs	....	....	8	4
To the caissons	8	....	8	....
Mounted men and drivers assigned				
To the guns	8	4	8	4
To the ammunition packs	....	....	16	....
To the caissons	8	....	8	....
Drivers for the spare horses, orderlies, and other special-duty men (cook, baker, etc.)	20	15	20	15

Personnel of a machine gun company (1904)—Continued.

	Field company.		Mountain company.	
	War.	Peace.	War.	Peace.
ENLISTED MEN (NONCOMBATANTS).				
Hospital attendant	1	1	1	1
Artificers	3	3	3	3
Teamsters:				
Spare-part wagon	2	....	2	....
Forge	1	1	1	1
Officers' baggage wagon	1	....	1	....
Company baggage wagons	5	....	5	....
Driver for field kitchen	1	....	1	....
Total enlisted men	95	59	119	63

The enlisted men are armed with carbine and bayonet.

Allotment of horses for machine-gun company (1904).

	Field company.		Mountain company.	
	War.	Peace.	War.	Peace.
Saddle horses:				
Officers' horses	5	4	5	4
Men's horses—				
Feldwebel (sergeant)	1	....	1	....
Noncommissioned officers	8	4	....	....
Drivers	1	....	1	....
Trumpeters	2	1	2	1
Spare saddle horses	1	....	1	....
Team and pack horses:				
Caissons	8	....	8	....
Spare horses	2	1	3	1
Draft horses for wagon train:				
Spare part wagons	2	....	2	....
Forge	1	....	1	....
Officers' baggage wagon	1	....	1	....
Company baggage wagon	5	....	5	....
Field kitchen	2	2	2	2
Spare horses	1	....	1	....
Materiel	56	20	56	16
FIGHTING BATTERY.				
Maxim guns with carriages	8	4	8	4
Two-horse limbers	8	4	....	....
Pack horses for guns	....	....	8	4
One-horse caissons	8	....	8	....
Pack horses for ammunition wagon train	....	....	16	4
Spare part wagons	2	....	2	....
Forge, etc	1	....	1	....
Officers' baggage wagon	1	....	1	....
Company baggage wagon	5	....	5	....
Field kitchen	1	....	1	....

Each limber carries 3 belts of 450 cartridges each and each caisson 10 belts of 450 each. The ammunition is the same as that of the infantry rifle, caliber 7.6 millimeters (0.30), model 1891.

In October, 1904, the Russian army had six companies of machine guns, attached to the first, second, third, fourth, fifth, and sixth divisions of the East Siberian Chasseurs.

By imperial order No. 676, November 6/19, 1904, there were created six new companies in the fourteenth, fifteenth, twenty-fifth, thirtieth, fortieth, and forty-first Infantry Divisions. These companies are kept on a war footing.

DISTINCTIVE MARKS OF A MACHINE-GUN COMPANY.

The personnel of the machine-gun companies (imperial order of October 7/20, 1904) wear the uniform of the division or brigade to which they are attached, but with the following differences: The shield on the collar of the tunic and greatcoat is crimson. On the epaulettes and shoulder straps of officers and on the band of the men's forage cap, above the number of the division or the brigade, are placed the letters *Πγλ*, the first letters of the word *Poulemetnaia*—machine-gun company.—*M. I. D., 1021–q.*

ORGANIZATION OF WAGON TRAINS IN THE RUSSIAN ARMY.

The trains are divided into three groups:

First. Regimental trains of the first series, including two-wheeled ammunition carts, the officers' extra horses, the special artillery wagons, the sanitary trains of the troop corps, the camp kitchens, and, whenever possible, the baggage carts of the officers. These wagons follow immediately after the corps to which they belong.

Second. Regimental trains of the second series, including the other ration wagons and the baggage of the troop corps, the reserve horses, the live cattle, and the canteen wagons.

The engineers' technical wagons march, according to circumstances, with one series or the other.

The regimental trains of the second series are united in a special column at the rear of the troops. The ammunition wagons form in this column a special group at the head of all the other wagons.

Third. Divisional trains, including all the other wagons belonging to the troops. Generally this train is a march in rear of the rest.

The artillery, engineers and telegraphic parks, the bridge-building corps, the ambulance and camp hospitals are given to one or the other series, according to circumstances.—*La France Militaire.*

THE RUSSIAN MOUNTAIN ARTILLERY.

It is known that the Russians were extremely embarrassed at the beginning of the present war by the lack of mountain artillery, from which resulted on many occasions the absolute impossibility of having guns at certain points to oppose the Japanese artillery. They endeavored to repair this lack, and our reader may remember that we announced the organization at first of three and then of six other mountain batteries for the army of Manchuria. Since then nothing in the accounts published by the Russian journals has furnished any information concerning the distribution, organization, and method of employment of these batteries. We find trace of them for the first time in the Novoye Vremya in correspondence relating to engagements with the Russian army of the East, the 9th and 10th of October.

It is said that the commandant of the Third Corps, operating in a very mountainous country and not being able to use his field artillery to support the forward movement of the infantry across the valley when violently assailed by the fire of the Japanese who occupied the opposite summit, had recourse to the Third Mountain Battery, which formed a part of his army corps.

This was the first time, says the correspondent of the Novoye Vremya, who seems to have accompanied the Russian columns, that the Third Mountain Battery was engaged with the enemy. Notwithstanding this, the gunners showed themselves to be efficient and masters of their material.

Their greatest difficulty was in the ammunition resupply. The incline was more and more steep as the summit was approached. This made it pitiable to see the strong artillery horses, well nourished and in good condition, laden with their burden and heavy harness, struggling to clamber up the incline with their ammunition chests. Every 20 or 30 meters it was necessary to stop them so that they could rest. They breathed hard, opening wide their nostrils, were covered with sweat, and fatigued, trembling in every limb.

The most successful moment of the action of the third battery was when, noticing a Japanese battery about to take position, they opened on them an accurate fire of all the pieces. In several minutes the Japanese battery was crushed, disappearing by degrees behind an elevation. It did not again appear.

It seems that several deductions may be made from the preceding.

Mountain batteries should be assigned to large units, without doubt to such as constitute the army of the east, operating in a mountainous country. The material was carried by draft horses which do not seem to have been accustomed to their special service, according to the above picture, which the Russian journalist gives of their efforts to reach the battery position, a little highly colored, perhaps, to make it more picturesque.

These few details added to the declaration appearing more and more frequently in the correspondence from the seat of war—that the Russian troops at the beginning of the war were completely ignorant of the practice of mountain warfare and are not yet expert—explain things which at first view seem astonishing. The Japanese, accustomed to maneuver always in the mountains, had marked advantages over the Russians as regards tactical instruction, and their mountain artillery, ballistically inferior to the Russian artillery, but easily transported and operated anywhere, furnished assistance which was wholly lacking to the Russian infantry. Now that the Russians also possess mountain artillery the situation is changed.—*La France Militaire.*

RUSSIAN BUDGET FOR 1905.

We take from the Russki Invalid (No. 12) the general plan of receipts and expenses of the Russian budget for 1905. The principal items are given below:

Receipts.

ORDINARY RECEIPTS.

	Rubles.
1. Direct impost taxes	139, 361, 354
2. Indirect impost taxes	399, 838, 500
3. Custom-house receipts	105, 324, 374
4. Regular taxes	592, 791, 300

	Rubles.
5. Income from Government property and capitals	379,994,897
6. Sale of Government estates	561,004
7. Redemption payments	76,408,100
8. Compensation for the expenses of the Government treasury	77,721,224
9. Miscellaneous	5,044,865
Total ordinary receipts	1,977,045,618

EXTRAORDINARY RECEIPTS.

10. Perpetual deposits in the Government bank	2,750,000
Total of extraordinary [?] [a] receipts	1,979,795,618
Available sums of the treasury	14,838,638
Grand total of the receipts	1,994,634,256

Expenditures.

ORDINARY EXPENDITURES.

1. Payment of interest on the debts	303,018,190
2. Supreme establishments of the Government	3,418,035
3. Administration of the holy synod	28,952,790
4. Ministry of the imperial court	16,127,920
5. Ministry of foreign affairs	5,704,035
6. Ministry of war	367,054,867
7. Ministry of the navy	116,637,050
8. Ministry of the treasury	341,640,895
9. Ministry of agriculture and of the Government estates	47,332,933
10. Ministry of the interior	108,603,833
11. Ministry of public instruction	43,068,486
12. Ministry of ways of communication	448,299,104
13. Administration of merchant marine and of harbors	12,346,668
14. Ministry of justice	49,854,629
15. Inspection service [Contrôle de l'Etat]	9,173,326
16. Service of the studs	1,832,810
	1,903,065,571
17. Caused by increase of prices of provisions and forage	3,000,000
18. For urgent and unforeseen demands	10,000,000
Total ordinary expenses	1,916,065,571

---

[a] Apparently a mistake in the original [note of translator].

EXTRAORDINARY EXPENDITURES.

	Rubles.
19. For the Trans-Siberian Railroad	11, 780, 000
20. For the construction of railroads	60, 801, 685
21. Subventions to private companies for construction of railroads	5, 987, 000
Total of extraordinary expenditures	78, 568, 685
Grand total of expenditures	1, 994, 634, 256

We give now the expenditures of the ministries of war and of the navy. At the side of each item are given the corresponding figures of 1904.

MINISTRY OF WAR.

	1905.	1904.
	Rubles.	*Rubles.*
1. Central administration	3, 641, 373	3, 700, 777
2. Local administration	10, 170, 390	10, 696, 780
3. Technical services and education	12, 197, 974	11, 975, 092
4. Sanitary service	4, 772, 046	4, 438, 395
5. Clothing and harness	26, 063, 295	23, 410, 424
6. Provisions	49, 901, 455	49, 067, 223
7. Forage	21, 401, 542	21, 204, 708
8. Pay	77, 744, 443	76, 680, 792
9. Recruiting	21, 368, 152	21, 628, 789
10. Construction and care of buildings	18, 954, 100	20, 878, 429
11. Artillery material	18, 683, 713	18, 506, 398
12. Keeping artillery in repair and artillery practice	2, 257, 700	2, 217, 007
13. Transportation and travel allowances	14, 188, 230	13, 684, 507
14. Mustering in of the contingent	2, 191, 115	1, 491, 395
15. Training of the reserves	2, 778, 067	2, 849, 942
16. Administration of Turkestan	1, 415, 725	1, 456, 278
17. Gendarmerie	5, 536, 718	5, 271, 188
18. Rewards and allowances	3, 962, 451	3, 986 242
19. Expenses in connection with gratuity funds	5, 797, 162	5, 715, 410
20. Extraordinary expenses	887, 757	890, 757
21. Kwantung Province	9, 709, 525	9, 214, 900
22. Rearmament	23, 092, 601	25, 357, 873
23. Miscellaneous	3, 083, 410	2, 913, 058
24. Reserve appropriation	17, 668, 953	19, 926, 728
25. Appropriation for the needs of the following fiscal year	8, 595, 000	8, 595, 000
Total	367, 054, 867	360, 758, 092

MINISTRY OF THE NAVY.

1. Central administration and administration of ports	2, 602, 963	2, 604, 753
2. Education	1, 318, 431	1, 185, 205
3. Sanitary service	1, 550, 767	1, 486, 190
4. Pay	7, 228, 120	7, 224, 011
5. Subsistence	1, 834, 000	1, 665, 296
6. Clothing	3, 621, 002	3, 256, 654
7. Navigation	22, 920, 000	21, 470, 643
8. Hydrographic service	1, 142, 959	1, 096, 045
9. Naval artillery and mines	15, 165, 246	12, 032, 274
10. New constructions and care of them	39, 069, 154	38, 743, 446
11. Shops and admiralties	6, 430, 994	5, 344, 094
12. Recruiting; care of buildings	5, 089, 984	4, 889, 050
13. Travel allowances	950, 000	950, 000
14. Rewards and allowances	636, 154	617, 444
15. Miscellaneous	2, 126, 262	2, 725, 209
16. Port improvements	4, 515, 835	6, 807, 676
17. Appropriations for the needs for the following fiscal year	435, 179	381, 732
Total	116, 637, 050	112, 461, 722

NOTE.—The value of the ruble is 51.5 cents.

GENERAL KUROPATKIN'S AVAILABLE TROOPS.

Concerning the fighting forces at the disposal of General Kuropatkin there have been made recently statements which were partly arbitrary, resting upon casual assumptions, partly such as did not include considerable bodies of troops or did not give their budget strength correctly. For the following calculations official Russian statements are exclusively the basis, as they are also for the budget strength. They can, therefore, deviate but little from the truth, whereby it is assumed that the losses arising from fighting and sickness have in the meanwhile been made good. The time of the calculation was the end of January of this year (1905), when the reenforcements last dispatched—three rifle brigades and the Sixteenth Corps—must have reached the war theater. In the fighting strength is included exclusively the fighting forces, viz, the number of rifles and sabers; in the total strength all men and horses assembled in the war theater.

Fighting strength.

INFANTRY.

	Divisions.
Five European Army Corps	10
European infantry divisions 54, 55, 61, 71, 72, formerly reserve brigades	5
Siberian infantry divisions	3
East Siberian sharpshooter divisions	7
European sharpshooter divisions, formerly brigades 1, 2, and 5	3
Total	28

Of these there are—	Rifles.
18 infantry divisions with 14,000 rifles	252,000
10 sharpshooter divisions with 7,000 rifles	70,000
Further:	
12 sapper battalions with 908 rifles, in round numbers	10,900
2 West Siberian sharpshooter battalions with 907 rifles, in round numbers	1,800
Total	334,700

CAVALRY (COSSACKS).

	Regiments.
Tenth Cavalry Division (3 dragoon and the First Orenburger Cossack Regiment)	4
Fourth Don Cossack Division	4
Sa-Baikal Division	4

	Regiments.
Siberian Cossack Division	4
Orenburger Cossack Division	4
First and Second Independent Cavalry Brigade (dragoons)	4
Ural Cavalry Brigade (1 dragoon regiment)	3
Sa-Baikal Cossack Division	2
Caucasia Cavalry Brigade	2
The infantry regiments assigned:	
Third, Sixth, Ninth Siberian Cossack regiments, Fourth and Fifth Ural Cossack regiments, 1 Orenburger Cossack regiment, First Argunsky, Third Verkhnludinsk and Amur Cossack regiments—3 Cossack divisions with (always 2 Sotnia)	10
Total	41

	Sabers.
32 Cossack regiments, including officers, noncommissioned officers, musicians	29,248
9 dragoon regiments	7,544
Total	36,792

ARTILLERY.

	Guns.
10 European and 3 Siberian infantry divisions with 64 guns	832
5 infantry divisions (formerly reserve brigade) with 48 guns	240
3 European and 7 East Siberian sharpshooter divisions with 24 guns	240
8 mounted batteries with 6 guns	48
2 European and 1 Siberian mortar regiment with 24 guns	72
12 East Siberian mountain batteries with 6 guns	72
Total	1,504

Number of artillerymen, 35,340.

Total fighting strength:

	Men.
Infantry	334,700
Cavalry	36,792
Artillery	35,340
Total (1,504 guns)	406,832

Frontier guards, railway and fortification troops, as well as landsturm, are not included, as they can find no place in the coming contests.

If one includes the above-mentioned troops which are not included, as also the noncombatants, the subsistence strength at the end of January amounted to 700,000 men, 180,000 horses.

It may well be assumed that Kuropatkin, at the head of over 400,000 men and 1,500 guns, will attack. Different points indicate it.

The three armies provisionally commanded—Linevitch, Grippenberg, and Kaulbars—must be fully complete by the end of January, for we can not assume that more than 400,000 men can be utilized in them. Twenty-eight divisions, or 14 army corps, are thus ready. Two armies of 5 and one of 4 army corps are the highest possible strength for the immediate conduct of a single leader.

From the contemplated reenforcements a fourth army may be formed, upon which subject details are wanting at the present time.—*The Internationale Revue*, *February*, *1905*.

NEW EXERCISE REGULATIONS FOR THE RUSSIAN ARTILLERY.

As in many other branches of its preparation, the Russian army has let itself be taken by surprise by war also with regard to its field artillery. And so its first troops have entered the field with material not built for rapid fire and with antiquated employment instructions. Only now are the new army corps getting new batteries, and the necessary instructions have only recently been imparted.

With regard to the material the points to be noted are that the projectile is in one piece—that is, the shell is joined to the case containing the powder; that the obturator is such as to render inadvisable keeping the piece loaded, so that it has been ordered that it must never be loaded until ready for firing; that, on the other hand, the cartridge already loaded can be extracted without danger, and, in fact, this is done when the graduation of the fuse is to be changed; that the piece has two lines of aiming, the right being generally used by the gunner, who is stationed at the aiming crank, to give the piece the first direction.

The mounted battery is composed of 8 pieces, 16 caissons, a reserve gun carriage, and the train (which includes a wagon for tools, a portable kitchen, and an ambulance wagon); 8 of the caissons are with the pieces and the rest in reserve. The horse battery is instead composed of 6 pieces and 12 caissons.

The fundamental principle—copied from the French—is for both mounted and horse batteries that piece and caisson constitute an absolutely undividable unit, but the formation for fire is not the same as in the French artillery.

The formations are two. Either the body of the caisson is placed 8 or 12 lengths from the trail of the carriage and then the limbers of the pieces and of the caissons are placed under cover in the neighborhood, or the limber of the piece is placed 8 lengths from the trail, with the horses headed to the rear, and then the caisson is kept in advance of the limber, with the horses also headed to the rear.

The space between the pieces is, as a rule, 24 paces, but it can be reduced to 8.

The formations of maneuver are reduced to "line," "column," and "lines of column;" the section column has been eliminated. The line can be of "full interval" of 24 paces, of "narrow interval" of 16 paces, and of "close interval" of 8 paces; each piece is followed at 3 paces by its own fighting caisson, while the reserve follows at 24 paces, led by an older noncommissioned officer. In the movements to the rear instead, each caisson precedes its piece at 3 paces.

In column of pieces each fighting caisson follows its own piece, but to shorten the column it may also be arranged for a caisson to keep to the left or to the right 8 paces away from the piece, but on the same line.

The line of columns is used as a mass formation; the 4 sections, in columns of pieces, are at intervals of 16 paces from each other, so that the battery presents a front of 50 paces and a depth of 100, or 150 at the outside.

Evolutions also have been simplified.

Changes of front of batteries and half batteries have been abolished; changes by piece or section can be made in the "line." If the interval is "full," changes of front are normally made by piece and can even be extended to 180°: if the interval is "narrow," changes of 180° per section and 90° per piece can be done; if the interval is "close," only changes of direction can be made. In the changes by piece, pieces and fighting caissons always make them individually; in those by section the two pieces of a section converge and the caissons do likewise individually.

The supply of ammunition is generally carried out as follows: First, the projectiles of the body of the fighting caisson are used; when these are almost finished the limber of the caisson comes up, its boxes are taken out, the body is attached, and thus the empty caissons retires toward the advance, which are disposed, as usual, with the body near the pieces, while the limbers take shelter near the limbers of the pieces.

Successive supplies are obtained by having recourse to the ammunition of the park (division column).

The battery commander can, however, arrange for the supply to take place in any other way he may deem advisable; he can, therefore, order that certain fighting caissons should be left untouched, or even certain caissons of the reserve, or the limbers of the fighting caissons, or he can also cause the projectile boxes of these limbers to be used.

As regards firing, it is to be noted that during the period of the range finding, fire is divided on all the front to be beaten, unless the commander of a battery should order the fire to be concentrated on a given point of the target.

Lastly, with regard to employment, the new regulations do not contain many rules. As is known the regulations of Russian exercises of the various arms only give formal prescriptions; everything referring to tactical employment is contained, for all arms, in the tactical instructions ("The engagement" of 1900).

Regarding the 1902 exercise regulations, the new ones say:

"Every step taken to take up positions and the taking of the position itself must be done without the enemy's knowledge; and every care should be taken to keep the contact between the battery and the reconnoitering officer in advance of it, between the pieces and the limbers, and the fighting battery and the reserve.

"As far as possible, everything reflecting on the preparation of fire should be done while waiting, before the pieces are brought up to the line of fire.

"The safety of the flanks of the battery is in the hands of the explorers; if there is an escort, the commander of the battery will designate where it is to halt."—*Italia Militare e Marina.*

THE RUSSIAN CASUALTIES.

The following, which appears in the Russki Invalid over the signature of the principal medical officer of the Russian armies in Manchuria, is interesting in relation to the varying accounts which have filtered home from the correspondents in the field in regard to the numbers of the sick and wounded. The returns make no reference to the numbers killed in action, which would of course hardly come within the cognizance of the medical authorities. From the date of the commencement of the war up to the 1st–14th January the following have been evacuated from the field hospitals and sent north—that is to say, to such places as Harbin, Khabarovsk, and Vladivostok: Officers wounded, 1,710; sick, 2,308; men wounded, 53,890; sick, 72,531; making a total sick and wounded of 130,439. During the same period there died in the hospitals: Officers wounded, 45; sick, 62; men wounded, 1,232; sick, 2,668; making a total death roll in hospital of 4,007. There were also 6,474 wounded and 11,248 sick, or a total of 17,722, who were declared unfit for further service. Of the numbers sent back to the interior of Russia there were: Officers wounded, 559; sick, 670; men wounded, 4,121; sick, 4,079; making a total of 9,429 thus sent back to Russia. On the 1st–14th January there still remained in the Russian military hospitals: Officers wounded, 152; sick, 634; men wounded, 4,953; sick, 15,815—altogether, 21,554. By deducting the four last totals from those evacuated to the north from the field hospitals we arrive at the numbers which were enabled to return to the field, viz, 1,896 officers and 75,831 men, making a total of 77,727 officers and men.—*The Broad Arrow.*

ARTILLERY FIRE.

Captain Krasnov, correspondent of the Russki Invalid, many of whose interesting letters our readers have already seen, has just sent to that journal observations made by Colonel Sliousarenko, commanding the first group of the Ninth Brigade of Artillery (Ninth Division of Infantry, Tenth Corps), on the methods of artillery fire and the value of the different kinds of projectiles.

Colonel Sliousarenko is delighted with the methods which permit of firing while out of sight. It is now hardly necessary, he says, to train cannoneers as pointers. It is sufficient to have intelligent men who are able to read the angle of direction on the goniometer and the angle of fire on the gunner's quadrant. *The whole of the firing is in the hands of the observer.* And it is possible to thus obtain concentrations of fire which are terrible for the enemy.

The colonel cites in support of this statement an incident in the battle of August 30 to the south of Liao-Yang. He at one time descried large Japanese columns and succeeded in finding their range with his batteries, placed out of sight. Under the fire of the Russian shrapnel the Japanese columns recoiled. It was sufficient to increase the elevation by three divisions and fire three more rounds per piece. The Japanese bearing first to the left and then to the right, to follow and cover them with projectiles it was only necessary to modify the angle of the goniometer in the desired direction.

This incident shows once more the value of indirect fire, even on the objectives in movement. It indicates at the same time the importance of the rôle of observers.

Colonel Sliousarenko considers that with the present shrapnel of the Russian artillery, which must be a kind of Robin shell, case shot has become useless.

In support of his dictum he cites an episode which took place on the 14th of October on the Sha-Ho:

"The Japanese infantry was marching toward the batteries. It filled a large gaolian field situated in front of the latter, and the bullets began to whistle over the heads of the gunners. The scouts reported that two Japanese squadrons seemed to be preparing for a charge. No objective was to be seen on which the artillery could fire, owing to the gaolian. I had the guns drawn up to the crest by hand and gave the order to fire—rounds per piece in progressive fire, changing the elevation gradually from the tenth to the twenty-fifth divisions, and altering the positions of the trails horizontally in a sweeping movement. So thoroughly did I clean up the field of gaolian in this way that not a single rifle shot was afterwards heard in that direction."

The area swept by the fire of shrapnel is extensive, and the bullets have a great destroying power. Nevertheless, Colonel Sliousarenko regrets that the Russian field batteries do not dispose of a certain number of explosive shells.

The Japanese greatly fear this kind of projectiles. When the Russian mortars began to fire lyddite shells the Japanese quickly evacuated the bombarded trenches and villages.

In this connection we recall the fact that, to judge from all the accounts of battles in which mention is made of the Japanese artillery fire, the latter would appear to employ shrapnel and shell alternately, whether against infantry or artillery in position, trenches, or localities.

It seems, moreover, according to the Russian accounts, that the action of explosive shell is not overpowerful. Its effect on troops sheltered in a trench is practically nil, and, outside a very small radius, its negligible explosions cause but slight wounds. Although the Japanese have employed it largely against artillery in position, we do not learn from any of the Russian accounts that the Russian guns were dismounted by accurate fire with explosive shell.—*M. I. D. 1890.*

A BATTERY OF ARTILLERY AT THE BATTLE OF DATCHICHAO,[a] JULY 11-24, 1904.

The Second Battery of the Ninth Brigade of East Siberian Artillery, commanded by Lieutenant-Colonel Pachtchenko, sustained a struggle of 15 hours against 6 Japanese batteries. Thanks to its concealed position and the use of indirect fire, it was able to hold its own during all this time against the enemy's artillery and even to inflict on it serious losses.

The battle commenced at 5 o'clock in the morning, and the battery in question took its position about half-past 6. At 10 o'clock it began firing on the Japanese batteries, which were stationed on the slope of some hills at a considerable distance away.

---

[a] Datchichao is the station on the Harbin-Port Arthur Railroad where the line branches to Peking by Kin-tcheou, Chan-hai-kouan, and Tien-tsin.

Until evening the Japanese were unable to locate the Pachtchenko battery, and it was not until almost 5 o'clock that it began to be struck by the enemy's projectiles, which were, in fact, intended for another Russian battery maneuvering to support it. This maneuvering, however, attracted the attention of the enemy, who at once began to shower the battery with shrapnel. The fight ended at 11 o'clock at night. The battery had fired 4,178 projectiles, 522 shots per piece for the whole day and 35 shots per hour for each piece. It lost only 2 men and 6 horses killed, while 38 men and 3 horses were wounded.—*From the Rousskii Invalid No. 203, 1904.*

THE ARTILLERY COMBAT AT DACHITCHAO.

We have already called the attention of our readers to certain peculiarities of the artillery combat which occurred at Dachitchao, July 24, and which is of interest because on that date for the first time the Japanese artillery in the course of a struggle of 15 hours obtained no advantage over the Russian artillery. We refer to it to-day, taking advantage of the account of this battle by Lieutenant-Colonel Pachtchenko, who participated in it—an account which appeared under his signature in the Viestnik Mandschourskoi Armii, a journal of the Manchurian army published under the direction of the general staff of General Kuropatkin. This account has, therefore, all the evidences of authenticity. We will give a résumé of this article, citing verbatim the principal passages.

* * * * *

At the beginning of hostilities mountain warfare was imperfectly known to us, said Lieutenant-Colonel Pachtchenko, and this embarrassed us greatly, especially as regards the employment of the artillery. On this account and also because of our great numerical inferiority we were subjected to checks, particularly as far as the artillery was concerned. Many of the Russian batteries were equipped with entirely new rapid-fire guns with whose valuable qualities in facilitating the regulation of the fire the officers were imperfectly acquainted.

Our dislike for fire executed from sheltered positions, the defective employment and lack of proper management of the fire of the artillery were the sole causes of our first repulse and the losses of guns which occurred in the encounters at the beginning of the war with the Japanese. A superficial knowledge of our artillery leads many writers to a hasty conclusion after the results of the first engagements, that the Japanese guns possessed qualities essentially superior to ours. But the results which have been obtained since the battle of Vafangoou show that the Japanese themselves were sensible how misplaced was the confidence in the superiority of the Japanese artillery.

For the first time, at Dachitchao, the Russian artillery was able to select and occupy only at the last moment their battery positions. On the other hand, in all the preceding engagements which occurred in positions prepared long in advance, the artillery occupied battery positions where the shelter had been prepared long beforehand, thus giving to the Chinese spies opportunity to signal to the Japanese before the struggle the positions of the Russian artillery, and in consequence opportunity to the latter to direct their fire with precision, very quickly causing the demolition of the Russian batteries, and as it was impossible for these to retire after the fire their consequent loss at the moment of retreat. At Dachitchao, on the contrary, while the disposition of the batteries was well known beforehand, care was taken not to erect the breastworks protecting the pieces until the last moment.

It was at Dachitchao, on the 24th of July, that we displayed for the first time all the strength of our field guns. This engagement showed to all who doubted the technical and ballistic qualities of our guns that it was only necessary to be acquainted with this ingenious and complicated machine in order to dispel all fear of the numerical superiority of artillery, however great that might be, which the Japanese might have in certain cases. On the 24th of July the Japanese massed their artillery (13 batteries against our right flank, opposite the artillery of the First Siberian Corps).

Until evening, when another joined us, we had only four batteries. In reality only three batteries took part in the artillery combat, because the terrain did not permit us to concentrate the fire of all our batteries on certain parts of the position. Hence there were, in effect, only 24 of our pieces engaged against 78 Japanese guns distributed over a front of 6 versts. Two batteries (the Second and Third) of the Ninth Brigade of the Eastern Siberian Artillery, on which the most violent fire was directed, were placed behind an elevation in the neighborhood of the village of Iounantoun, about 500 meters from the summit and about 100 meters from the foot of our side of the incline. As the batteries were situated about 500 meters behind an elevation 24 meters in altitude they were able to cover the approaches up to a distance of 2,200 meters.

* * * * *

During the night the artillerists prepared the cover for their pieces, these being placed at intervals of about thirty paces.

It should be remarked as regards this subject that many of the artillerists did not allow intervals of more than 20 paces between their pieces, the normal interval being only 12 paces. But according to numerous measurements made by means of the goniometer of the intervals between the Japanese pieces I was convinced that this interval was not, as a general rule, less than 30 paces, from which I concluded that the Japanese knew, perfectly the extent of the zone covered by our shrapnel (this zone being 16 meters at the utmost).

The morning of the 24th of July, at the break of day, the Japanese opened fire with two batteries. From the first it was evident that their fire was directed at the 12 old positions of the pieces on the summit, which was 500 meters in front of the position really occupied. The fire was begun methodically with percussion shell. The first round hit the middle of the enemy's side of the slope, the next ones the summit itself. Almost at the same time a third one of the enemy's batteries opened fire. These three batteries were outside of the effective range of our shrapnel at the extreme possible range of fire. They fired with great precision, and were wholly without cover, two on the summit to the south of the village of Datchapou and the third opposite our left flank—that is to say, opposite the First Brigade of the Eastern Siberian Artillery, near Tsiantsiatoun.

We received very shortly an order to engage with them, but less than half an hour later new hostile batteries appeared all along the front, as follows: Two on the eastern outskirts of Datchapou, 2 on the summit to the west of the village, 3 others between that elevation and Sandsiatsi, 1 near to Tchansitoun, 1 near to Insiatoun * * *. These 12 batteries participated in the struggle against our right flank—that is to say, against our Second and Third batteries of the Ninth Brigade of Eastern Siberian Artillery. It was difficult to observe when these batteries arrived and took their position, but in two hours they had all concentrated their fire on our positions, and the imminent fire of their shell damaged our infantry intrenchments established on the summit of the hill and on their side of the hill slope.

Here are the details which Lieutenant-Colonel Pachtchenko gives concerning the trenches. It is necessary to distinguish between the Tranchees de combat, occupied only at the moment of fire, and the Tranchees d'attente, covered and protected behind the summit, communicating with the first by means of a passageway itself partly covered. Then he returns to the methods of artillery fire of the enemy.

The Japanese were evidently convinced that our artillery occupied the 12 emplacements prepared on the summit, for they concentrated a most intense artillery fire, first of high explosive shell and then of shrapnel, on the cover itself, then on a zone 200 meters in the rear—that is to say, that the terrain fired upon by them stopped 300 meters short of our guns.

Perceiving that their fire had not the least influence upon the intensity of our fire, they commenced to fire upon the entire slope occupied by us, turning their fire to the right and the left of the zone upon which they first fired, but here again they did not depart from their first method; they did not go beyond a depth of 200 meters and did not find our batteries.

Exasperated by their failure, they raked our whole hillside with high-explosive shell, some of them falling 50 or 60 meters in front of our batteries and some of them on the batteries themselves, but without doing damage.

The accurate fire of the Japanese destroyed the two villages of Iounantoun, as they aimed to fire upon the terrain back of our batteries.

Toward 3 o'clock in the afternoon the Fourth Battery of the First Brigade was sent to the right of our sector. Its arrival was noticed by the Japanese, who opened upon it shrapnel fire with three or four batteries. This new battery was shielded by an elevation of insufficient height. The flash of their shots was plainly visible to the Japanese from the heights to the north of Datchapou, where they had established a post of observation (outside of the range of our artillery).

The Japanese attach great importance to the positions occupied by the observers and officers who direct the artillery fire. They often select special batteries to fire upon groups of officers, and especially upon those who direct the fire of our batteries, choosing positions for their observers outside the zone of fire, far behind or to the side of their batteries.

We may add to this account that the reports of other eyewitnesses frequently show us that the Russian and Japanese often direct their fire from a distance by telephone, or by means of signals, which confirms the account of Colonel Pachtcheko.

The new Russian battery (Fourth, of the First Brigade) had scarcely opened fire when the Japanese shrapnel began to fall on the hill and in rear of it, and we began to have wounded men in our two batteries. Happily the Japanese did not always know our exact position, which, besides, they found at the extreme limit of the effective range of their shrapnel, and it was impossible for them to move their batteries nearer to us, of which 7 only, on account of the precision of our fire, could again fire on us. Twice they essayed to change the position of the batteries placed to the west of Sandsiatsi, their limbers emerging from behind the wood in the neighborhood of this village, and twice they were caught by our fire. The horses ran away, and the limbers disappeared far in the rear. These two batteries of the Japanese were unfitted for action, and it was reported that they were destroyed.

The other Japanese batteries did not attempt to advance. Toward 5 o'clock in the evening the Japanese succeeded in changing the positions of one of their batteries and in installing it near the village of Tchansitoun on the flank of our batteries and at a distance of 4 versts (4,200 meters). But at that moment one of the Cossack horse batteries occupied shelter to the west of Tiansiatoun, on the embankment of the railway, and drew upon themselves the fire of this Japanese battery. As the horse battery was very well masked by the village, the hostile battery could not direct their fire upon the former, and, on the contrary, they themselves suffered serious losses. Toward 8 o'clock in the evening the Japanese, under shelter of the village of Dotchapou and of the neighboring heights, succeeded in advancing another of their batteries, which was placed at Lioubaisa. This battery could not fire for any length of time, as the elevations as well as the adjustment of the fuse was already exactly known, as it was for all of the villages situated within our zone of fire.

Therefore after our first shell the fire of the hostile battery was confused, and very soon this battery ceased its fire. The cannonade ceased throughout the entire line at 9 o'clock in the evening.

After a cannonade of 15 hours the First Siberian Corps had in all 50 men placed hors de combat. This result was due to the judicious employment of our rapid-fire guns. * * * To prove this it is sufficient to recall that the official Japanese report mentions that on our side 100 pieces were in action at Dachitchao.

It was at Dachitchao for the first time that our artillery was employed in a new manner. It was not installed all at once at the outset in the defensive position. Only a part was employed at first intended for a long-distance struggle or reconnaissance combat, so to speak. It is true that in the case of a less numerous artillery it would be necessary to employ the half for this purpose. The Japanese have recourse very generally to this method. We see them placing in action at first only 2 or 3 batteries out of 13. These batteries without shield were placed outside of the effective range of our shrapnel and opened a shrapnel and high-explosive shell fire, which from the start forced us to disclose the positions of our batteries. We were forced to this because we had no other means of estimating the distance than by opening fire.

After the adoption in many of our batteries of the excellent telemeter of Captain Aubry, of the French artillery, this ruse of the Japanese was no longer effective, and our batteries, having the means of estimating the distance, no longer opened fire on objectives of this sort. Every time that we allowed ourselves to be caught in this trap the Japanese advanced the mass of their batteries, taking ample time for orientation, preparing the concentration of the fire of their batteries distributed over an extensive front, which in consequence was little vulnerable. Then they inflicted serious losses on our batteries with one round, especially as these were distributed according to the old principles of the time when there was no pointing apparatus permitting fire from positions completely defiladed.

The Japanese, accustomed to making lateral observations and aided by the Chinese spies, had no great difficulty in disabling the fire of our artillery. After they had obtained this result, they made a bound 400 meters forward, and sought, by means of their high-explosive shell, to raise a sort of screen between our batteries and their center of resupply, endeavoring to reach our caissons and limbers. At the same time their infantry energetically assumed the offensive. The concentration of our artillery, to which we had recourse in order to facilitate the command, assisted them in obtaining the result desired. That the personnel of the Russian fire was placed hors de combat was sufficient to prevent them from removing the pieces in case of a check.

The picture is entirely changed if, disregarding the reconnaissance batteries of the adversary, occupying defiladed positions, and having prepared in advance all the elements of fire (sights, fuses, etc.), our batteries are content to patiently observe the enemy's position and to wait, before opening fire, for the moment when the hostile batteries take position. Usually the Japanese opened fire very slowly—that is to say, the preparation of the pieces for the first round was slow—which gave us additional opportunity for preparation for the combat. Our silence during the fire of their batteries of reconnaissance disconcerted them from the first, the more so because they had always sought to prepare for the fire beforehand.

In closing this account Lieutenant-Colonel Pachtchenko mentions a very peculiar method of ammunition resupply used by the Japanese firing batteries during the engagement of Dachitchao. In most cases this resupply was made by chains of men, who passed the ammunition by hand from the masked positions where the caissons were placed to the firing batteries. The cause of this was doubtless the absolute impossibility of taking teams and full caissons under fire to replace the empty ones.

* * * * *

In another article, soon to appear, we will again refer to the interesting account of Lieutenant-Colonel Pachtchenko, which is a document of inestimable value, having all the characteristics of an official account made by an eyewitness, with the approbation of the commandant, since the Viestnik Mandchourskoi Armii is published under the surveillance and care of the great general staff of Manchuria.—*La France Militaire.*

RUSSIAN NAVAL LOSSES.

First-class battle ships.—Tsarevitch (disarmed at Kai-Chau after action of August 10), *Petropavlovsk* (sunk by a mine off Port Arthur April 13), *Retvizan*, *Pobieda*, *Poltava*, *Peresviet*, *Sevastopol* (all sunk at Port Arthur).

First-class armored cruisers.—Bayan (sunk at Port Arthur), *Rurik* (sunk in action August 14), *Gromoboi*, and *Rossia* (badly damaged in action August 14, lying at Vladivostok).

First-class cruisers.—Varyag (sunk at Chemulpo February 9), *Bogatyr* (at Vladivostok, badly damaged from striking on a rock), *Askold* (disarmed at Shanghai, after action, August 10), *Diana* (disarmed at Saigon, after action, August 10), *Pallada* (sunk at Port Arthur).

Third-class cruisers.—Boyarin (sunk by mine February 14), *Novik* (wrecked after action August 10), *Vsadnik*, *Gaidamak*, *Zabiaca*, *Rasboinik*, and *Djijdjit* (sunk in Port Arthur).

Submarine mine depot ships.—Yenisei (blown up while laying mines), *Amur* (sunk in Port Arthur).

Gunboats.—Koreëtz (destroyed at Chemulpo February 9), *Sivoutch* (destroyed at Niuchwang), *Mandjur* (disarmed at Shanghai), *Otvazhny*, *Grosiashtchy*, and *Gilyak* (destroyed at Port Arthur), *Gremiashtchy* (destroyed by a mine off Dalny).

The number of destroyers which the Russians had at Port

Arthur has never been clearly stated, but the following are believed to have been accounted for, though the accuracy of the list and names of vessels is not guaranteed: *Steregutchi*, *Silny*, *Strashny*, *Siasky*, *Buiny*, *Barakoff*, *Ietirny*, *Sesy*, *Boiroi*, *Storojersky*, *Raziatchtiy* (sunk in action or at Port Arthur), *Retshitelny* (captured at Chefoo, after battle, August 10), *Burny* (wrecked off Shan-tung, after battle, August 10), *Rastoropny* (blown up at Chefoo), *Grozovoi* (disarmed at Shanghai), *Bezupretshny*, and *Bezstratshny* (disarmed at Kai-Chau, after action, August 10); six allowed to escape at time of surrender of Port Arthur, and detained—the *Boiki* and *Smeli* at Kai-Chau, and the *Skori*, *Vlastny*, *Serditi*, and *Statni* at Chefoo.

The most serious loss sustained by the Japanese was the destruction of the first-class battle ship *Hatsuse* by a mine some 10 miles off the Liao-ti-shang Promontory, on May 15, and the sinking the following night of the fast cruiser *Yoshino*, after collision in a fog with the *Kasuga*. The coast-defense ship *Heiyen* (captured from the Chinese) and the cruisers *Miyako*, *Kaimon*, and *Saiyen* were sunk by striking mines near Dalny. There have been persistent rumors that the first-class battle ship *Yashima* was also, like the *Hatsuse*, sunk in June by striking a mine near Dalny. It should be noted that Togo makes no mention of her as a complete loss, and all that can be said is that the Japanese authorities have never denied or confirmed the rumor. A telegram, however, published in Rome on the 8th instant, from Tokyo, sent by the Italian agency, throws some light on the matter, for it states that the battle ship *Yashima*, which was sunk by a mine, had at last been successfully raised and brought safely into dock, where her repairs were being energetically proceeded with. This would look as if she had been badly damaged by a mine, but had fortunately only sunk in shallow water or had been beached; and that so long as there was a chance of salving her, the Japanese preserved perfect silence on the matter. The fact that, as is clear now, in the battle of August 10 the Russians had 6 battle ships to the Japanese 4 shows the bad handling of the Russian ships in a worse light than ever.—*Journal of the Royal United Service Institution.*

SPAIN.

PEACE STRENGTH OF ARMY.

In order that the Spanish army may be maintained at the peace strength decided upon of 83,000, all the regiments of the regular army will have to reduce their complement from November 1 last. The peace strength of units will consequently be as follows: Infantry—Fifty-eight regiments in the Peninsula to 519 men each; 6 battalions (the First, Fifth, Seventh, and Twelfth Rifles and the Second and Fourth Mountain Battalions) to 436 men each, and the remaining 12 rifle and mountain battalions to 395 men each. Cavalry—Regiments attached to divisions to 474 men each, the Galician Chasseur Regiment to 355 men, the remaining 23 cavalry regiments to 373 men each. Artillery—Three mountain artillery regiments to 480 men, and Mountain Artillery Brigade Division in camp at Gibraltar to 357 men, the First Siege Artillery Regiment to 277 men, the Second to 558 men, the Third to 237 men, the Fifth to 580 men, and the Sixth to 219 men. Engineers—The First Regiment to 525 men, the Second to 580, the Third to 548, the Fourth to 502, the Pontoon Regiment to 379 men, the Telegraph Regiment to 483, the Railway Regiment to 345, and the Artificers Company to 90 men. Administration troops—The First Brigade to 775 and the Second to 461 men. Medical troops—Seven hundred and fifty-seven men.—*United Service Magazine.*

REORGANIZATION OF SPANISH ARMY.

The Spanish war minister has recently been authorized by the Cortes to modify the organization of the army, within the limits of the ordinary budget, on the following broad lines:

(*a*) Reorganization of the war department and the creation of a grand general staff.

(*b*) Reorganization of the supreme council of war and of the navy.

(*c*) Abolition of consultative war junta, whose duties will mostly be transferred to the grand general staff.

(*d*) Creation of a director-general of the stud and of the remount.

(*e*) Creation of inspector-general of military, educational, and industrial establishments.

(*f*) Reorganization of the military educational establishments, and the creation of a military general college.

(*g*) Restoration of army corps, abolished since 1899.

(*h*) Reorganization of the various branches of the service, recruiting, and reserve districts.—*United Service Magazine.*

THE CREATION OF NEW STAFF UNITS IN SPAIN.

A royal order of December 9 (current) creates:

(*a*) *A central staff* (chief general staff) charged with preparation for war and direction of the higher instruction of the army.

At the head of this organization is placed a lieutenant-general who is entitled *chief of the central staff of the army.* He reports to the minister of war.

His associates comprise:

One general of division, subchief; 1 general of brigade; 72 field officers and captains of the staff corps, of different arms and diverse duties. Two flag officers of the navy are attached to the central general staff for matters relating to coast defense.

The issues coming within the prerogatives of the central staff are distributed among: First, a secretaryship divided into two bureaus, one treating of matters relating to the personnel, the other having especially before it the technical study of ways of communication, the instruction of troops, and the inspection of telegraphic service, of aerostation, of field lighting, and railways; second, five sections, namely, (1) organization and mobilization; (2) instruction; (3) material and revictualing; (4) fortifications and military structures; (5) depot of archives (cartographic military institute).

As to their specialties the following establishments, forces, and departments are placed under the control of the central staff: The war academy, central school of firing, riding school, telegraphist and railway units, balloon park, topographical brigade, committee on investigations and tests of matériel.

The *central committee on military transportation*, provided for by the regulation respecting military transportation by the railroad, is presided over by the subchief of the central staff, and comprises, as military personnel, 1 colonel of staff, 1 lieutenant-colonel of artillery, 1 major of engineers, 1 military subintendant (colonel or lieutenant-colonel, 1 commissary (lieutenant-colonel or major, inspector), and 1 captain of staff, secretary, all belonging to the central staff.

(*b*) *A general inspection of military, educational, and industrial establishments*, the prerogatives of which require: First, the investigation of questions pertaining to the operation of the schools of application of the different arms and of the general military college (establishments to be organized); second, extraordinary inspections of establishments of instruction and establishments of production upon the order of the minister of war; third, the examinations of publications and inventions of native soldiers for the purpose of making a report upon them to the minister of war and recommending the compensations to be awarded to their authors.

This general inspection comprises 1 lieutenant-general, inspector, 4 generals of brigade (1 of each arm), 1 intendant of division (general of brigade), and 1 medical inspector of the second class (general of brigade).

(*c*) *A general direction of horse breeding and remount*, presided over by a lieutenant-general, and composed of two sections, each presided over by a general of brigade.—*Bulletin de la Presse.*

REORGANIZATION OF THE SPANISH ARMY.

In execution of a law of July 17, 1904, several royal orders modify the organization of the army as follows:

(*a*) The Peninsula territory is divided into 7 military districts, in each of which is established 1 army corps, comprising 2 divisions, 1 mixed regiment of sappers and telegraphists, besides: For the First Corps (Madrid), 1 brigade of light infantry consisting of 6 battalions and 1 section of telegraphists, 1 regiment of mounted artillery, 1 division of cavalry consisting of 2 brigades of 2 regiments, and 1 regiment of horse artillery; for the Second Corps (Seville) and the Fourth Corps (Barcelona), 1 brigade of light infantry consisting of 6 battalions and 1 section of telegraphists (the brigade of the Second Corps has, besides, 1 group of 3 mountain batteries), 1 brigade of cavalry consisting of 2 or 3 regiments; for the Sixth Corps (Burgos), 1 brigade of cavalry consisting of 2 regiments; for the Third Corps (Valencia), Fifth Corps (Saragossa), and Seventh Corps (Valladolid), 1 regiment of cavalry.

The 14 divisions are each composed of 2 brigades of infantry (1 division has 3 of them), consisting of 2 regiments, 1 of cavalry and 1 of mounted or mountain artilllery.

As to the various arms in the Peninsula:

First. The infantry forms 58 regiments of the line, consisting of 3 battalions (2 of which are active and 1 a skeleton battalion of the first reserve) of 4 companies; 18 battalions of chasseurs (1 detached at Ceuta), consisting of 4 active companies and 1 depot company; 116 skeleton battalions of the second reserve.

The reserve regiments have been abolished.

Second. The cavalry comprises 1 squadron of the royal escort and 28 regiments; 27 regiments are organized, consisting of 4 active squadrons and 1 depot squadron; 1 regiment comprises 3 active squadrons and 1 skeleton squadron which is mobilized in time of war.

The reserve regiments have been abolished and replaced by 14 district reserve depots.

Third. The 13 field artillery regiments, of which 1 is mounted, maintain an organization in two groups—one of 3 batteries, and the other of 2 batteries—but they permit a sixth depot battery.

The 3 regiments of mountain artillery consist of 4 active batteries and 1 depot battery. The independent group of mountain artillery remains composed of 3 batteries (1 detached at Ceuta).

The regiment of siege artillery includes 1 section of teams, 4 active batteries, and 1 depot battery.

The battalions of fortress artillery are replaced by 7 commands of fortress artillery, comprising altogether 56 batteries.

Lastly, the number of district reserve depots is raised from 8 to 14.

Fourth. The engineer troops are grouped in 7 mixed regiments of sappers and telegraphists, consisting of 6 companies, 5 of sappers and 1 of telegraphists, besides 2 depot companies; 1 regiment of pontoniers of 4 companies, 1 railway battalion of 4 companies, 1 company of garrison telegraphists, 1 company for aerostation and field lighting, 1 topographical brigade, and 1 company of laborers.

The number of district reserve depots is reduced from 8 to 7.

(*b*) The troops assigned for the defense of our North African possessions consist of:

First. At Ceuta, 1 regiment of infantry consisting of 3 battalions of 4 companies (detached from the peninsula), 1 mountain battery, 13 fortress batteries, 1 company of sappers and miners, besides the *volunteer militia*, consisting of 1 company of Moorish fusiliers, 1 squadron of chasseurs, and 1 company of marine infantry.

Second. At Melilla, 1 regiment of infantry, consisting of 3 battalions of 4 companies, 1 punishment company, 1 squadron of chasseurs, 1 mixed group of 2 batteries (1 mounted and 1 mountain), 6 fortress batteries, 1 company of sappers and miners, besides 1 company of marine infantry.

(*c*) The Balearics and Canaries have:

First. Balearics—Two regiments of infantry, consisting of 3 battalions of 8 companies (2 active and 6 skeleton), 1 regiment of infantry, consisting of 3 battalions of 4 companies, 1 battalion of infantry of 4 companies (1 active and 3 skeleton), 2 squadrons of chasseurs, 2 mixed groups of 2 batteries (1 mounted and 1 mountain), 26 fortress batteries, 2 companies of sappers, and 2 of telegraphists.

Second. Canaries—Three regiments of infantry, consisting of 3 battalions of 8 companies (2 active and 2 skeleton), 1 regiment of infantry, consisting of 3 battalions of 4 companies (1 active and 3 skeleton), 1 battalion of chasseurs of 8 companies (2 active and 6 skeleton), 3 battalions of infantry of 4 companies (1 active and 3 skeleton), 2 squadrons of chasseurs, 2 mountain batteries, 14 fortress batteries, 2 companies of sappers, and 2 of telegraphists.—*Bulletin de la Presse.*

REORGANIZATION OF THE WAR COLLEGE.

In accordance with an order from the King, dated the 31st of May last, this institution of military instruction, which was organized the 3d of February, 1893, has been reorganized.

No officer will be admitted to this school who may not have satisfactorily passed the entrance examination.

Officers to the grade of captain who may wish to take said examination must forward an application in writing to the King.

The entrance examination will be in writing only.

The length of the courses is fixed at three years, each session to begin the 1st of September and to end the 1st of June. A student will be permitted to repeat a particular course of study only in case of sickness.

The classifications at the end of the sessions are no longer recorded by means of numerals, but only by means of the words " Proficient " or " Not proficient." The first remark may be replaced by either of the following words: " Excellent " or " Very good."

Student officers having once received diplomas as eligible for the staff must serve for a period of two years in the different branches of the service, as follows: In the infantry corps if they formerly belonged to the cavalry or in the artillery corps if they formerly belonged to the infantry, also in the different branches of the engineer corps and the staff, and finally to the principal school of instruction in target practice. After this they will return to their respective branches of the service.

They will enjoy the following privileges: They will wear on their collars a star embroidered in gold, placed near the number or insignia of the corps to which they belong.

They will receive extra pay equal in amount to one-fifth of that received by a captain dismounted until they may have reached the grade of major for those who are first lieutenants at the completion of their studies, and until they have reached the grade of lieutenant-colonel for those who were captains at the completion of their studies.

In making selections for the position of commandante in the military schools and for the position of aides, adjutants, etc., preference will be given to the graduates of the war college.

They may be nominated for the position of foreign military attachés.

Finally, those who are colonels may be placed, according to their age, among the first third of their grade in the army register. They will be promoted by selection, provided that said promotion may be justified by the fact that they also manifest superior intelligence and judgment.

Officers of the staff, says Revue Militaire des Armèes Estrangerès (No. 922), will form, in general, a reserve of the staff corps, and at their request, if they are captains, they will occupy the vacancies which may occur in said staff corps.—*Boletin Militaire.*

SWEDEN.

ARTILLERY FIRE AGAINST SHIELDED GUNS.

During last year experiments were carried out in Sweden to test the results of artillery fire against shielded guns. The shields used were constructed both of hard and of soft steel of varying thicknesses. Shielded timbers representing ammunition wagons were placed near the guns, and two of these contained each 20 percussion shells arranged with the heads alternately to front and rear. The results were as follows: The shrapnel bullets caused severe dents in the 4-millimeter thickness of soft steel. A shell which burst only a very short distance in front of the gun caused the whole shield to bulge, while the shell splinters tore larger holes in the soft than in the hard steel plates, from which the shrapnel bullets rebounded without any noticeable effect. It was observed that the rivets and joints of the hard steel shields seemed much better able to stand the fire than those of the soft steel plates. A 5-millimeter thickness of shield was found to be proof against lead-covered bullets at all ranges; against steel bullets from 500 meters. From the Swedish experiments it would seem that there is not so much fear of exploding even a badly hit ammunition wagon as has generally been imagined. Splinters frequently struck the full timber boxes, and in two of them shells actually exploded; none of the shells in the timbers burst, however, although they were knocked to pieces and the shell casings were torn off and the charges scattered about.—*The Broad Arrow.*

SWITZERLAND.

THE SWISS ARMY.

According to official lists the Swiss Federal army consists, including officers, of 236,431 men of the Élite and Landwehr, thus distributed:

Élite: Infantry, 114,971; cavalry, 5,107; artillery, 17,464; engineers, 5,763; medical services, 1,919; administrative services, 1,414; total, 147,861.

Landwehr: 18,659; first levy, 41,435; second levy, 25,476; men.

The distribution of the whole by the various arms is as follows:

Infantry, 178,522; cavalry, 8,904; artillery, 30,326; engineers, 10,246; medical services, 3,796; administrative services, 2,251; cyclists, 109; total, 7,104 officers, 28,303 noncommissioned officers, and 198,747 men.

In addition the Landsturm consists of 294,388 men; 45,864 are combatants and 242,524 noncombatants.—*United Service Magazine.*

COMPANIES OF MACHINE GUNS.

Every cavalry brigade of the Swiss army is provided with a company of machine guns of 8 pieces.

The company is formed of 4 platoons, each of which is divided in 2 squads and commanded by an officer. To each piece are assigned 2 ammunition-bearing pack horses with about 4,000 shots per piece.

The gunners aim, serve, and fire; the horsemen have charge of the guns on the march and of the safety service.

The noncommissioned officers are chiefs of piece; the corporals see to the horses and to providing ammunition.

The regulations establish three kinds of fire:

1. Volley firing of 20 or 30 shots in a given place. It serves to regulate the fire.

2. Quick fire, which is the normal fire, during which the objective is divided among the various pieces.

3. Single fire, only used in exceptional cases.

The principal has been established that, as a rule, the 2 pieces of each platoon must always be united and that the captain should strive to keep together as much as possible his 4 platoons.

The machine-gun company should, normally, provide for its own safety.—*Esercito Italiano.*

PROJECTS OF MILITARY REFORMS.

From various Swiss papers we gather the following news on the subject of projects of military reforms at present being considered by the Federation:

The fundamental principle of the military service is always that every Swiss citizen must give his personal service according to his ability. The only dispensations granted are those for the railway employees, on the condition, however, that they will attend for three weeks the school of recruits and three revision courses.

All the men obliged to serve are divided into three classes: Élite, from 20 to 33 years, inclusive; Landwehr, from 34 to 40 years, inclusive; Landsturm, from 41 to 50 years, inclusive. Youths under 21 can be called, in case of mobilization, to complete the field troops.

The country would be divided into three territorial districts, corresponding to 6 divisions of infantry. Every division would include 3 brigades of 3 regiments of 3 battalions; these would be of 3 companies and the companies of 3 platoons. The force of the battalion would be of 697 men.

Besides, each division would include 1 cavalry brigade of 2 regiments, a total of 6 squadrons; 1 artillery brigade of 2 regiments, each of 2 groups of 3 batteries; 1 battalion of sappers; 1 artillery park; 1 ambulance; 1 administrative convoy.

The project foresees, however, the existence of two or three army corps general staffs to facilitate the grouping of divisions in time of war and the organization of Alpine troops (alpenjäger) to replace the present "chasseurs" battalions. Each division would have a regiment.

With regard to instruction, a preparatory gymnastic instruction of at least 60 hours is wished for.

To those from 16 to 20 years of age firing instruction, to be given in each commune by cadres for the purpose, is added.

The recruiting infantry schools would be increased from 45 to 60 days. The other arms would get 60 days, except the cavalry, which would get 80.

The revision courses would take place every year instead of every 2 years, and would last 11 days.

All the officers, noncommissioned officers, and the men of the eight youngest classes would be present.

The "landwehr" would also have an annual course of revision of 11 days.

The duration of the courses for the preparatory officers' schools would be increased from 70 to 105 days for all arms. Besides, the infantry lieutenants would follow a course of fire of 15 days; those of cavalry a course of scouting of 15 days; those of artillery a course of fire of 20 days, and a tactical course of 20 days when they are proposed for advancement.

Besides, the lieutenants of the fighting arms would follow a central school course of 40 days, and before being promoted captains would have to command a unit for the duration of a recruit's course.—*Italia Militare e Marina.*

TURKEY.

NEW RIFLE BATTALIONS.

Streffleur's Österreischiche Militärische Zeitschreft announces the formation, in Turkey, of 4 rifle battalions of 4 companies of 3 sections, specially meant to suppress brigandage. Each of these battalions will consist of 26 officers, 800 rank and file, 200 draft awards, 2 machine guns, 2 mountain guns, and 1 heliograph section. The number of rifle battalions in the Turkish army is thus raised from 19 to 23.—*United Service Magazine.*

MISCELLANEOUS.

DIARY OF THE WAR.

Feb. 5. The Japanese minister in St. Petersburg announces rupture of diplomatic relations by order of his Government.

Feb. 8. (Evening.) Japanese squadron under Admiral Uriu, escorting transports, arrives at Chemulpo. Russian gunboat *Korietz* fires the first shot of the war.

(Midnight.) Attack by Japanese squadron under Admiral Togo on Port Arthur. Two Russian battle ships (*Cesarevitch* and *Retvizan*) and one cruiser (*Pallada*) torpedoed.

Feb. 9. (Morning.) Naval action renewed. One Russian battleship (*Poltava*) and three cruisers (*Novik*, *Aksold*, *Diana*) injured.

Naval fight off Chemulpo. Japanese destroy Russian cruiser *Variag* and gunboat *Korietz*.

Feb. 10. Formal declaration of war by Japan.

Feb. 11. Russian mine-ship *Yenisei* blown up at Ta-lien-wan.

Feb. 12. China proclaims her neutrality. M. Pavloff, the Russian minister, leaves Seoul.

Feb. 14. Attack on Port Arthur by Japanese destroyers in a snowstorm. Russian cruiser (*Boyarin*) torpedoed.

Feb. 16. Admiral Alexeiff leaves Port Arthur for Harbin. The Japanese cruisers *Nisshin* and *Kasuga* arrive at Yokosuka.

Feb. 17. Admiral Makaroff appointed to supersede Admiral Starck.

100,000,000 yen (£10,000,000) treasury bonds taken up in Tokyo.

Feb. 18. Publication of Russian communiqué recommending patience.

Feb. 20. Cossacks cross the Yalu.

Publication of Russian account of the diplomatic negotiations.

Feb. 21. General Kuropatkin appointed commander in chief of Russian forces in Manchuria by imperial ukase.

Feb. 22. Count Lamsdorff's circular to the powers.

Feb. 23. Agreement between Japan and Korea signed at Seoul.

Feb. 24. (Early morning). Japanese attempt to seal Port Arthur by sinking vessels.

Feb. 25. Renewed naval fighting off Port Arthur.

Feb. 28. Russians and Japanese in touch near Ping-yang.

Feb. 29. The Japanese take possession of Hai-yun-tau, one of the Elliot Islands.

Mar. 2. Publication of Japan's reply to the charges contained in the Russian communiqües of February 18 and 20.

Mar. 6. Admiral Kamimura bombards Vladivostok.

Mar. 9. Publication of Japan's reply to Count Lamsdorff's circular note of February 22.

Mar. 9–10. Japanese destroyers attack Port Arthur shortly after midnight. Russian destroyer sunk.

Mar. 12. General Kuropatkin leaves St. Petersburg.

Mar. 21–22. Bombardment of Port Arthur. Russian fleet takes up a position at the entrance of the harbor.

Mar. 23. Japanese and Russians in touch at Pak-chen.

Mar. 27. Second attempt to block the entrance to Port Arthur. Four steamers sunk.

General Kuropatkin reaches Harbin.

Apr. 6. Japanese occupy Wiju and Russians retreat across Ya-lu.

Apr. 8–9. Skirmishes on the Ya-lu.

Apr. 12. The *Koryo Maru*, supported by Japanese torpedo vessels, lays mines outside Port Arthur.

Apr. 13. Japanese destroyers cut off and sink a Russian destroyer in the vicinity of Port Arthur.

Japanese cruisers decoy Admiral Makaroff out of Port Arthur. On the return of the Russian squadron the *Petropavlovsk* is sunk by a mine and Admiral Makaroff drowned.

Apr. 14. Japanese fleet appears again off Port Arthur, but Russians remain silent.

Apr. 15. *Kasuga* and *Nisshin* bombard Port Arthur by high-angle fire from Pigeon Bay.

Apr. 23. Japanese advanced guard crosses the Ya-lu.

Apr. 25. Vladivostok squadron appears suddenly off Gen-san and sinks Japanese merchant steamer *Goyo Maru*.

Apr. 26. Japanese transport *Kinshiu Maru* sunk by two Russian torpedo boats.

Apr. 27. Japanese attempt to block the channel at Port Arthur. Fighting on the Ya-lu begins.

Apr. 29–30 and May 1. Battle of the Ya-lu. The first Japanese army, under Kuroki, forces the crossing of the Ya-lu near Wi-ju, defeats Russians under Sassulitch with great slaughter, and captures 28 guns. Kiu-lien-cheng captured by the Japanese.

May 1. Japanese renew their attempts to block Port Arthur by means of fire ships.

May 3. Port Arthur blocked for battle ships and cruisers.

May 4. (Morning.) Second Japanese army sails from Chinampo.

(Evening.) Admiral Hosoya with first fleet of transports appears off Pi-tsze-wo in Liau-tung Peninsula.

May 5. Admiral Hosoya lands naval brigade and a division at Pi-tsze-wo.

May 6. Japanese occupy Feng-hwang-cheng.

May 8. General Oku cuts the railway at Pu-lan-tien.

May 10. Cossacks unsuccessfully attack An-ju.

May 12. Japanese fleet, under Admiral Kataoka, bombards Ta-lien-wan. Japanese torpedo boat sunk by a mine in Kerr Bay.

Japanese 6 per cent sterling loan of £10,000,000 issued in London and New York at 93½.

May 13. Russian 5 per cent external loan of 800,000,000 francs (£32,000,000) issued by Banque de Paris group.

May 14. Japanese dispatch boat sunk by a mine in Kerr Bay. Japanese occupy Pu-lan-tien.

May 15. Japanese cruiser *Yoshimo* sunk in collision with cruiser *Kasuga*. Japanese battle ship *Hatsuse* sunk by a mine near Port Arthur.

May 16. Japanese second army moves on Kin-chau.

May 19. Japanese third army lands at Ta-ku-shan.

May 20. Russian cruiser *Bogatyr* runs on the rocks near Vladivostok.

May 24. Japanese bombarded Port Arthur.

May 27. Battle of Kin-chau: Japanese storm Nanshan and capture 78 guns. Admiral Togo establishes blockade of south end of Liau-tung Peninsula.

May 30. Japanese occupy Dalny; Stackelberg's Corps dispatched to relieve Port Arthur, in touch with Japanese at Wa-fang-kau.

June 4. Russian gunboat sunk by a mine near Port Arthur.

June 7. Kuroki begins his advance.

June 8. Japanese occupy Siu-yen and Saimatse.

June 11. Japanese blockade Niu-chwang.

June 14. The Russian destroyer flotilla makes a sortie from Port Arthur, but is driven back by Togo.

June 14–15. Battle of Telissu. Japanese storm Russian position at Wa-fang-kau. Russians retire on Kai-ping, with a loss of 7,000 men and 16 guns.

June 15. Vladivostok squadron at sea; sinks two Japanese transports, *Hitachi Maru* and the *Sado Maru*.

June 16. Vladivostok squadron, under Admiral Skrydioff, captures the *Allenton*, bound from Muroran to Singapore.

June 20. General Kuropatkin arrives at Kai-ping and inspects General Stackelberg's troops.

June 21. Oku's army occupies Hsiung-yao-cheng, 30 miles north of Telissu.

June 23. The Russian fleet makes a sortie from Port Arthur, but is driven back again, with loss, by Togo. Kuropatkin takes command of the Russian army in person.

June 26. The two armies face to face, Russians holding the line Kai-ping, Ta-shih-chiao, Liau-yang. Japanese south of Kai-ping, Lien-shan-kuan, Saimatse. Japanese approach Port Arthur from the land side, and capture Hsitaushan and Kenshan.

June 27. Japanese capture three important passes giving access to the Liau Valley, Fen-shui-ling, Mo-tien-ling, and Ta-ling. Japanese sink two ships in Port Arthur by a torpedo attack.

June 28. Japanese Sixth Division lands at Kerr Bay.

June 30. Vladivostok squadron bombards Gen-san.

July 1. Vladivostok squadron eludes Admiral Kamimura near Tsu Shima.

July 3, 4, 5. Severe fighting at Port Arthur by land and sea. General Stössel retreats from the first of the outlying lines of defense. Japanese cruiser *Kaimon* sunk by a mine in a fog off Ta-lien-wan.

July 4–6. The *Peterburg* and *Smolensk*, cruisers of the volunteer fleet, pass the Bosporus under the commercial flag.

July 6. Marshal Oyama, commander in chief, leaves Tokyo for the front.

July 9. Second Japanese army, under General Oku, occupies Kai-ping.

July 11. British steamships *Menelaus* and *Crewe Hall* stopped south of Jiddah by volunteer cruiser *Peterburg.*

July 13. British steamship *Malacca* stopped by *Peterburg* in Red Sea and taken back to Suez.

July 15. Steamship *Prinz Heinrich* stopped by *Smolensk* and mails seized.

July 16. British steamship *Hipsang* sunk by Russian destroyer in Gulf of Pechili.

July 17. Ineffectual attack by General Count Keller on the Mo-tien-ling position.

July 19. Steamship *Scandia* stopped in Red Sea and taken back to Suez.

July 20. Vladivostok squadron passes Tsugaru Straits into the Pacific, pursued by Japanese torpedo flotilla. British ambassador in St. Petersburg hands a protest against the seizure of the *Malacca*, and a request for her immediate release.

July 24. British steamship *Knight Commander* sunk by Vladivostok squadron off Idzu. British steamship *Formosa* overhauled in the Red Sea and taken back to Suez. Japanese torpedo three Russian destroyers outside Port Arthur.

July 25. General Oku, after severe fighting, drives the Russians back from their intrenched positions on Ta-shih-chiao. Japanese occupy Niu-chwang.

July	26–30.	Severe fighting at Port Arthur. Japanese capture Wolf Hill. General Stössel retreats from the second of the outlying lines of defense and falls back toward Port Arthur.
July	27.	Release of the *Malacca.*
July	28.	Assassination of M. de Plehve.
July	31.	General Japanese advance. Japanese drive Russians back all along the line on Hai-cheng, Pan-hsi-lu, and Yan-zu-ling. Investment of Port Arthur begun.
Aug.	3.	General Oku occupies Hai-cheng and Niu-chwang, town. Russians at Port Arthur driven back onto their inner lines.
Aug.	8.	Combined land and sea attack on Port Arthur ends in capture of Takushan and Shakushan.
Aug.	10.	Sortie of the Port Arthur fleet. Admiral Togo attacks and disperses them, seriously damaging five battle ships. Admiral Vitoft killed. Some Russian vessels take refuge in the neutral ports of Shanghai, Chifu, and Tsing-tau, but the majority are driven back into Port Arthur.
Aug.	11.	A Russian destroyer stranded 20 miles east of Wei-hai-wei. Lord Lansdowne makes a statement in the House of Lords with regard to contraband.
Aug.	12.	Birth of the Cesarevitch. Japanese board and capture Russian destroyer *Reshitelni* in Chifu Harbor.
Aug.	13.	Admiral Rozhdestvensky assumes command of Baltic fleet.
Aug.	14.	Admiral Kamimura engages Vladivostok squadron 40 miles northeast of Tsu Shima and sinks cruiser *Rurik.* Japanese bombard Port Arthur.
Aug.	16.	Russian fleet attempts another sortie from Port Arthur. Japanese send a flag of truce into Port Arthur advising the removal of noncombatants and the surrender of the fortress. British steamers *Asia* and *Pencalenick* stopped in vicinity of Cape St. Vincent by Russian cruiser *Ural.*
Aug.	17.	Russians refuse both Japanese proposals. British and American ambassadors in St. Petersburg protest simultaneously against Russian decision to regard foodstuffs as contraband of war.
Aug.	18.	The attack on Port Arthur renewed, Russian gunboat *Otvajni* sunk by a mine off Liau-tie-shan.
Aug.	19.	Japanese protest against prolonged stay of *Askold* and *Grosovoi* at Shanghai.
Aug.	19–24.	General attack on Port Arthur.
Aug.	20.	Japanese cruisers *Chitose* and *Tsushima* drive *Novik* ashore in Korsakovsk Harbor. 174 Meter Hill captured.

Aug. 21. Steamship *Comedian* stopped by *Smolensk* 80 miles from East London.

Aug. 22. East and West Panlungshan forts captured.

Aug. 23. Russian battle ship *Sevastopol* damaged by a mine in Port Arthur. General Kuroki's left column commences the operations leading up to the battle of Liau-yang.

Aug. 24. The Czar orders the disarmament of *Askold* and *Grosovoi*. Failure of first general attack on Port Arthur.

Aug. 25. Mr. Balfour receives a deputation representing the interests of British shipping.

General Japanese advance on Liau-yang begun.

Aug 25, 26. Kuroki's center column carries Russian position at Kung-chang-ling. Second and third armies attack An-shan-chan.

Aug. 27, 31. Renewed attacks on Port Arthur.

Aug. 28. Russians, having lost all advanced positions, are driven back upon Liau-yang. Kuroki gains right bank of the Tang-ho and effects junction with second and third armies.

Aug. 29–30. Japanese cannonade Russian positions and make infantry attacks, but make no material impression on the defense.

Aug. 31. Second and third armies resume their attack and make progress in the direction of Hsin-li-tun and Shou-shan.

Sept. 1. Russians driven out of their works at these points, and Russian right and center fall back toward river line. First army carries Manjayama Hill.

Sept. 2–3. Second and third armies continue their attacks.

Sept. 3. Kuropatkin orders a general retreat.

Sept. 4. Russian rear guard after delaying Japanese for two days finally evacuates Liau-yang.

The Japanese enter Liau-yang at 3 a. m.

Sept. 4–5. Russian army in retreat fights rear guard actions with Kuroki, who occupies Yen-tai coal mines.

Sept. 6. In vicinity of Zanzibar, British cruiser *Forte* conveys to the *Peterburg* and *Smolensk* the Tsar's orders to desist from interfering with neutral shipping.

Sept. 7. Kuropatkin arrives at Mukden.

Sept. 13. Vladivostok prize court decides to release British steamer *Calchas*, but confiscates its cargo of flour and cotton.

Sept. 16. Russia recognizes distinction between absolute and conditional contraband.

Sept. 18. The Japanese armored gunboat *Hei-yen* strikes a mine and sinks.

Sept. 19–20. Capture of Fort Kuropatkin and the Sueiszeying redoubts.

Sept. 20. Capture of Namaokayama.

Sept. 21. Japanese obtain a footing on 203-Metre Hill, but are subsequently obliged to retire.

Sept. 25. Russian imperial rescript appointing General Gripenberg to command second Manchurian army.

Sept. 26. Circum-Baikal Railway opened.

Sept. 29. New military system introduced into Japan making men who have passed into the territorial army eligible for foreign service for 17½ years.

Oct. 2. Publication of Kuropatkin's order of the day, declaring the Manchurian army to be strong enough to begin a forward movement.

Oct. 9. Russians cross Tai-tse and attack the Japanese first army.

Oct. 10–11. Severe fighting at Pen-hsi-hu.

Oct. 12, 13, 14. Heavy fighting all along the line. Russians driven back over the Sha-ho.

Oct. 15. Baltic fleet leaves Libau.

Oct. 16. Japanese capture Hachimakeyama (near Ehrlungshan).

Oct. 17. Baltic fleet anchors off the Danish coast.

Oct. 18. Baltic fleet passes through the Great Belt.

Oct. 20. Baltic fleet proceeds to the North Sea.

Oct. 21, 22. Baltic fleet at midnight fires on Hull fishing fleet.

Oct. 22. The supreme prize court in St. Petersburg releases the *Allanton.*

Oct. 24. Urgent representations addressed by the British to the Russian Government.

Preliminary orders for mutual support and cooperation sent to the Mediterranean, channel, and home fleets.

Oct. 25. The Tsar sends a message to the King expressing his extreme regret.

Oct. 26. Baltic fleet arrives at Vigo.

Japanese seize trenches on the Ehrlungshan glacis.

Oct. 28. Mr. Balfour, at the Southampton meeting of the National Union of Conservative Association, announces that an international commission of inquiry is to be constituted in accordance with the provisions of The Hague convention.

Oct. 29. Four Russian officers left behind at Tangier.

Baltic fleet begins to arrive at Tangier.

Oct. 31. Japanese gain possession of the glacis crests of Ehrlungshan, Sungshushan, and the north fort of East Keekwanshan.

Nov. 2. Sir Charles Hardinge submits the British proposals for the constitution of the commission of inquiry.

Nov. 4. Foreign office statement on contraband.

Nov. 5. Russia accepts the draft proposals of Great Britain, but difficulties are subsequently raised.

Baltic fleet leaves Tangier.

General Linevitch appointed to command first and General Kaulbars appointed to command third Manchurian army.

Nov. 10. Admiral Alexeieff arrives in St. Petersburg.

Admiral Folkersahm's division at Suda Bay.

Nov. 12. Admiral Rozhdestvensky at Dakar till November 16.

Nov. 12. Japanese 6 per cent sterling loan (second series) for £12,000,000 issued in London and New York at 90½.

Nov. 15. Board of trade inquiry opened at Hull.

Nov. 16. Russian destroyer *Raztoropni* blown up by her commander at Chifu.

Nov. 17. Supplementary division of the Baltic fleet leaves Libau.

Nov. 24. Admiral Folkersahm's first division arrives at Port Said.

Nov. 25. Anglo-Russian convention signed in St. Petersburg.

Attention drawn to the voyage of the torpedo boat *Caroline* from the Thames to Libau.

Nov. 26. Confiscation of the *Cheltenham* confirmed in St. Petersburg.

Rozhdestvensky at Gaboon (French Congo).

Nov. 27. Folkersahm's division leaves Suez.

Nov. 28. Letter published from Lord Lansdowne to the chamber of shipping, setting forth the view of the foreign office as to the supply of British coal to the Russian fleet.

Nov. 30. Capture of 203 Metre Hill. Japanese cruiser *Sai Yen* sunk by mine.

Dec. 2. Folkersahm's division passes Perim.

Crews of Russian war ships give trouble at Shanghai.

Dec. 3. Supreme prize court at St. Petersburg reverses decision of Vladivostok tribunal as to *Thea* (sinking of steamer now declared not to be justified) and *Arabia* (cargo of flour now declared not to be contraband).

Guns of Japanese naval brigade open fire on Russian ships in Port Arthur.

Dec. 5. The Russian naval headquarters staff in St. Petersburg admits that cruiser *Aurora* was struck by Russian shells on night of October 21. Folkersahm's division coaling at the Musha Islands.

Dec. 6. Japanese occupy Akasayama.

Rozhdestvensky at Great Fish Bay.

Dec. 11. Rozhdestvensky at Angra Pequena.

Dec. 12, Torpedo attacks on the *Sevastopol*.
15.

Dec. 18. Tungkeekwanshan fort taken.

Dec. 19. Rozhdestvensky passes Cape Town.

Japanese seize the British steamer *Nigretia*, bound for Vladivostok.

Dec. 22. Japanese occupy Hon-san-yang-tan, near Pigeon Bay.

Japanese squadron reported off Singapore.

Commission of inquiry meets in Paris and adjourns to January 9.

Dec. 22– Japanese dislodge several Russian outposts at Port Arthur.
25.

Dec. 24. Admiral Togo reduces the blockading squadron.

Dec. 28. Capture of Erhlungshan.

Dec. 31. Capture of Sungshooshan.

1905.

Jan. 1. General Stossel proposes and General Nogi accepts surrender of Port Arthur.

Four Russian destroyers escape to Chifu.

Rozhdestvensky arrives at Ile Sainte Marie, off Madagascar.

Jan. 2. Port Arthur capitulation agreement signed.

Jan. 3. Folkersahm arrives at Passandava Bay, Madagascar.

Jan. 4. Itszshan and other forts delivered to Japanese as guarantee of capitulation.

Jan. 5. *Nigretia* condemned by Japanese courts.

Meeting of Nogi and Stossel.

Official report by General Nogi, reckoning the surrendered garrison at 32,207 prisoners and over 15,000 sick and wounded.

Jan. 6. Prisoners march out of Port Arthur.

Jan. 8. Supplementary division of Baltic fleet leaves Suda Bay.

Jan. 9. International Commission of Inquiry into North Sea incident resumes its sittings.

Jan. 10. Suplementary squadron of Baltic fleet (Admiral Botrovosky) at Port Said.

Jan. 11, 12. General Mishchenko makes a raid to the south, attacks old Niu-chwang and cuts line, but is forced to retire.

Jan. 12. Fifteen million seven hundred and ninety-five thousand pounds of a Russian 4½ per cent loan of 500,000,000 marks (£25,000,000) issued in Berlin. Remainder was to be issued later; believed to be now placed.

General Nogi announces capture of 546 guns and 82,670 rounds of gun ammunition at Port Arthur.

Jan. 13. Baltic fleet at Diego Suarez.

Admiral Botrovosky's squadron leaves Suez.

Russian circular note presented to powers, protesting against alleged infractions of Chinese neutrality.

Jan. 18. Admiral Botrovosky's squadron at Jibuti.

Jan. 19. First public sitting of Commission of Inquiry, in Paris.

Jan. 22. Strike riots in St. Petersburg. Troops fire on populace.

Jan. 25–29. Russians cross the Hun-ho and attack Japanese left wing. Heavy fighting, at the conclusion of which Russians are forced to retire. Japanese losses, 7,000 killed and wounded. Russian losses over 10,000.

Jan. 31. Japanese statement published in reply to Russian circular respecting alleged infractions of Chinese neutrality.

Feb. 3–5. Russians renewed desultory attacks on Japanese left and center.

Feb. 5. Report current in St. Petersburg of General Kuropatkin's recall or resignation.

—*London Times.*

COMPARATIVE INCREASE OF CONTINENTAL ARMIES.

While the budgets of the foreign armies increase sensibly every year from 1893, ours (the Italian) instead diminish gradually to finally reach the consolidated figure of 239,000,000 lira. Elsewhere, as will be seen, peace effectives and organic units increased, while in Italy the system of the smallest force between April and September was established, making any serious and profitable instruction of troops impossible.

Barring the institution of the depots for infantry regiments which took effect in 1897, and the adoption of new field material for the artillery, nothing has been done in Italy for the army.

Austria during 1903–4 increased the infantry by 5 battalions, the wagon train by 16 squadrons, the mountain artillery by 1 battery; 14 divisions of field howitzers were, besides, created in 3 batteries of 6 pieces each (one for each army corps), besides 7 infantry brigade commands and a cavalry division.

Finally, our neighbor beyond Isonzo, though generally considered most parsimonious in military expenses, has lately assigned a credit of 88,000,000 crowns to the building of new field material.

In the same length of time Germany increased its infantry by 87 battalions, its cavalry by 17 squadrons, its field artillery by 80 batteries (66 of which are light howitzer batteries), its fortress artillery by 14 companies, its pioneer corps by 5 companies, its railway corps by 11 companies. It created, besides, 16 quick-firing gun batteries.

In consequence of the institution of these new detachments the force under arms in time of peace at the present day reaches 587,000 men, against the 480,000 of 1893.

France in these last 10 years has formed fourth battalions of 4 companies in 67 regiments of infantry (subdivisional), the number of companies in all the battalions of foot chasseurs being brought from 5 to 6; 10 new battalions of sharpshooters, 3 battalions of engineers, and 5 companies of cyclists have been formed. The formation of a colonial army corps of 3 divisions is also to be noted, as also the assigning of groups of curved-firing artillery to the army and navy corps.

To all this must be added that France, Germany, and Austria have provided in a large measure for the defense of coasts and frontiers. Our naval strongholds could offer but a very weak resistance with their antiquated armament, and our frontiers are but indifferently defended, especially the eastern one.

Besides, our immediate neighbors have the greatest facility for bringing up troops to the frontier, while our railways, from the military point of view, leave much to be desired.—*Italia Militare e Marina.*

VESSELS LAUNCHED IN 1904.

The Marine Rundschau sums up as follows the number of war ships of various nations launched in 1904 and their tonnage: United States, 17 ships, with a total of 177,350 tons displacement; Great Britain, 16 ships, total, 120,056 tons; Germany, 5 ships, total, 42,400 tons; France, 3 ships, total, 42,290 tons; Italy, 2 ships, total, 25,260 tons; Austria, 3 ships, total, 11,480 tons.—*United Service Gazette.*

RECOIL-CONTROLLING DEVICE FOR GUNS.

A patent has recently been issued to Mr. Samuel N. McLean, of Cleveland, Ohio, for a device for controlling the recoil of all kinds of firearms. The invention relates particularly to a construction of the gun barrel so as to utilize the energy of the powder gases to oppose the recoil and to control their energy for various other purposes. As stated, the invention is claimed to be applicable to all kinds of firearms, including small arms, machine guns, and ordnance. The device, which is shown in figure 1, may be an integral part of the barrel of the gun or may be separate and screwed onto the muzzle. In the form of the device shown in the figure, which is the latest improvement thereon, the interior of the gun barrel near the muzzle is provided with a gradually deepening spiral groove, associated with a series of vents. The whole device is so constructed that the gases shall first impinge upon the front surface of the groove, which surface is practically at right angles to the axis of the bore, and then escape through the vents in an oblique direction to the rear. The vents referred to gradually increase in size in the direction of the muzzle. These grooves are inclined to planes through the axis of the bore, and in such a direction that the pressure of the gases due to this inclination is opposed to the tendency to rotate caused by the rifling. The recoil is controlled by the pressure of the gases against the forward face of the spiral groove and by the reaction of the gases upon the air in their escape to the rear through the vents. The effect of the device is also to gradually lessen and very much reduce the blast of the gun, as well as the report of discharge. Figure 2 shows the vents in axial planes, while figure 3 shows the vents in inclined position. The inventor applies the device to an automatic machine gun, a part of the gases escaping through the vent being utilized to operate the mechanism.

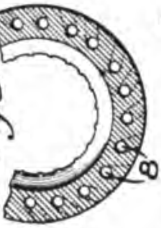


Fig. 3.

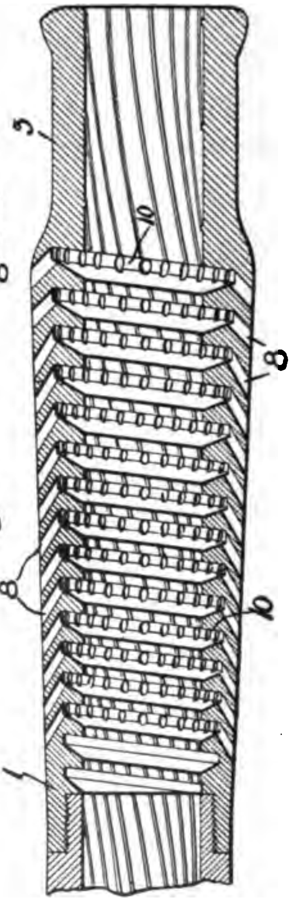


Fig. 1.

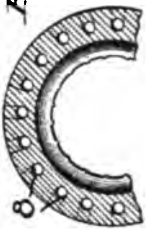


Fig. 2.

GOVERNMENT PUBLICATIONS OF MILITARY INTEREST.

For the benefit of those officers of the Army who may wish to add to their military libraries at small cost, the following price list of Government publications of more or less military interest has been selected by the General Staff from the many publications listed by the Government Printing Office, and is published for the information of all concerned.

Detailed information as to sales and rules to be observed in ordering are herewith reprinted from the price list of the Superintendent of Documents:

1. The Superintendent of Documents is authorized by law to sell any surplus document in his charge at cost of printing from the plates.
2. The law prohibits the sale of more than one copy of a document to the same person. If more than one copy of the same document is desired, give a name and address for each extra copy.
3. In ordering documents follow entry in price list.

REMITTANCES.

4. Remit by postal money order or registered letter. Make orders payable to the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C.
5. Coin may usually be sent in small amounts with safety, if wrapped or otherwise secured. Such remittances will be made, however, at sender's risk.
6. Do not, *under any circumstances*, send stamps, private checks, foreign, defaced, or slick coin. Such remittances will be returned at the cost, if any, of remitter.

REMITTANCES FROM FOREIGN COUNTRIES.

7. Remittances from all foreign countries should be made by international postal money order, payable to the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C.
8. Postage should be added to the price of documents on orders from all foreign countries *except* Canada, Cuba, and Mexico.
9. Documents weighing in excess of 4 pounds 6 ounces will be sent by express, which must be prepaid.

ALASKA:	
Affairs in, reports of Capt. L. A. Beardslee, U. S. Navy, relative to, and operations of U. S. S. Jamestown in waters of that Territory. 1882. (47th Cong., 1st sess. Senate ex. doc. 71)	paper 15c
Agricultural investigations in—	
1899. (Experiment Stations bulletin 82)	paper 10c
1900. (Experiment Stations bulletin 94)	paper 20c
Agricultural prospects, natives, salmon fisheries, coal prospects and development, and timber and lumber interests of, 1903. (General Land Office)	paper 15c
Agriculture in, report to Congress on—	
1898. (Experiment Stations bulletin 48)	paper 10c
1899. (Experiment Stations bulletin 62)	paper 10c
Altitudes in. 1900. (Geological Survey bulletin 169)	paper 5c

Alaska—Continued.

Beach mining in; report from Committee on Public Lands. (56th Cong., 1st sess. House report 566)---------------- paper 5c

Biological reconnoissance of base of peninsular. (North American Fauna 24)---------------------------------- paper 10c

Civil government, act making further provisions for, approved June 6, 1900. (56th Cong., 1st sess. Public 158)--- paper 15c

Exploration of, maps and descriptions of routes of, with general information by Geological Survey, 1898. (55th Cong., 3d sess. Senate doc. 172)------------------------- paper 35c

Explorations in, compilation of narratives of. (56th Cong., 1st sess. Senate report 1023)- paper $1.75; cloth $2.10; sheep $3.25

Explorations in, reports of—

1898. (Military information series 25)------------ paper 45c

1899. (Military information series 31)----------- paper 25c

Farmers in, suggestions to pioneer. (Alaska Agricultural Experiment Stations bulletin 1)------------------------ paper 5c

Fur-bearing animals in, report from Committee on Ways and Means. (57th Cong., 1st sess. House report 2303. 2 pts.)-- paper 10c

Fur-seal and other fisheries of, 1889------------------ cloth 50c

Game law in, report on H. R. bill 11535. (57th Cong., 1st sess. House report 951)-------------------------------- paper 5c

Geographic dictionary of, 1901. (Geological Survey bulletin 187)-- paper 30c

Gold-bearing rocks, map showing known, with text and sketches of geography, geology, and gold deposits, and routes to the gold fields. Jan. 20, 1898. (55th Cong., 2d sess., Senate doc. 195)--- paper 15c

Gold fields and opportunities for capital and labor. (Labor bulletins 16 and 19)------------------------- paper 20c and 10c

Handbook of, Aug., 1897. (American Republics bulletin 84.) paper 25c

Homestead laws, act extending and providing right of way for railroads in, May 14, 1898, instructions issued under—

June 8, 1898. (General Land Office circular)------ paper 5c

Jan. 13, 1904. (General Land Office circular)------ paper 5c

Hydrographic notes, sailing directions, and charts relating to vicinity of Prince William Sound, Cook Inlet, etc. (Coast and Geodetic Survey bulletin 38)---------------- paper 25c

Hydrographic notes and sailing directions, Dixon entrance to Yakutat Bay, etc. (Coast and Geodetic Survey bulletin 37) paper 15c

Maps of northwest part of North America and, in Library of Congress. (Library of Congress)----------------- paper 10c

Memorial relative to mining claims located by aliens in. (56th Cong., 1st sess. Senate doc. 272)----------------- paper 5c

Military reconnaissance in, 1883; by Frederick Schwatka. cloth 75c

Northern, reconnaissance in (Geological Survey professional paper 20)--------------------------------------- paper 40c

Reconnaissance in, 1885; by Henry T. Allen---------- cloth 85c

Reindeer in—

1896. (Bound in Senate doc., v. 3, 54th Cong., 2d sess., with other documents)------------------------------ cloth $1

1897-- paper 10c

1898. (Bound in Senate doc., v. 4, 55th Cong., 3d sess., with other documents)------------------------------ cloth $1

1899. (Bound in Senate doc., v. 25, 56th Cong., 1st sess., with other documents)------------------------------ cloth $1

ALASKA—Continued

Reindeer in—Continued.
    1900 paper 30c
    1901 paper 40c
    1902 paper 30c
    1903 paper 40c
Salmon fisheries in, report from Committee on Territories, May 16, 1902. (57th Cong., 1st sess., House rep. 2062) paper 5c
Chinookan languages, bibliography of, including Chinook jargon; by J. C. Pilling. 1893. (Ethnology bulletin 15) paper 5c
Copper River district, Alaska, geology and mineral resources of portion of. (Geological Survey, 1901.) (56th Cong., 2d sess., House doc. 546) paper 40c
Copper River exploring expedition, Alaska, 1899; by W. R. Abercrombie. (56th Cong., 1st sess., Senate doc. 306.) paper 50c, cloth 60c
English-Eskimo and Eskimo-English vocabularies. (Circ. no. 2, 1890, Bureau of Education) paper 5c
Eskimo language, bibliography of; by J. C. Pilling. 1887. (Ethnology bulletin 1) paper 15c
Seward Peninsula, Alaska, reconnaissance of northwestern portion. (Geological Survey professional paper 2) paper 30c

ARGENTINA:

Alfalfa and beef production in. 1904. (Agriculture Department report 77) paper 10c
Animal industry of. (Animal Industry bulletin 48) paper 20c
Geographical sketch, with special reference to economic conditions, actual development, and prospect of future growth of, 1903. (In American Republics report, 1903, 58th Cong., 2d sess., House doc. 111, pt. 2) paper $1
Handbook of, 1892, revised to Feb. 1, 1894. (American Republics bulletin 67) paper 35c

ARMY:

Efficiency of. 1902 paper 5c
General Staff of, legislative history of, 1775–1901 cloth 55c
Historical register and dictionary of, 1789–1903; by F. B. Heitman. 2 vols cloth $2
Hygiene of, with descriptions of military posts, May 1, 1875. (Circular 8, Surgeon-General's Office, War Dept.) paper $1
List and directory of officers of; issued monthly and sold for 10c a single copy or $1.00 a year.
Officers, regular, appointed officers of volunteers, since May, 1898. (56th Cong., 2d sess., Senate doc. 116) paper 5c
Officers of volunteer regiments organized under act of Mar. 2, 1899—
    Sept. 30, 1899 paper 5c
    June 1, 1900 paper 15c
Pay of, compendium of, 1785–1888 paper 5c
Reorganization—
    House Committee on Military Affairs, report of, with views of minority on. (55th Cong., 3d sess., House rept. 1709, pts. 1 and 2) paper 5c
    objections of five members of Senate Committee on Military Affairs on. (55th Cong., 3d sess., Senate doc. 123.) paper 5c
    same. (55th Cong., 3d sess., Senate rept. 1671) paper 5c
    present condition and draft of bill for. (56th Cong., 2d sess., Senate doc. 12) paper 5c
    Senate committee report on. (56th Cong., 2d sess., Senate rept. 1771) paper 5c

ARMY—Continued.

Surgical cases in, 1865–1871. (Circular 3, Surgeon-General's Office, War Dept.)	paper $1
Uniform of, regulations and decisions pertaining to—	
1898, 2d edition	cloth 25c
1900, 4th edition	paper 5c
Use of, in aid of civil power. (Lieber.) 1898	paper 10c
Army canteen, sales of intoxicating drinks in, report on bill to prevent. (56th Cong., 1st sess., House rept. 1701, 2 pts.)	paper 10c
same, hearing before Senate Committee on Military Affairs, Dec. 7–14, 1900	paper 5c
Army cooks, manual for, 1896	leather 50c
Army rations, issue and conversion tables. 1901	cloth 10c
Army register. 1905	paper 35c
Army regulations, 1904	cloth 35c
Autumn maneuvers of 1898, in Austria-Hungary, France, Germany, Great Britain, Russia, and Switzerland. (Military Information series 26)	paper 25c
same, 1899, in Austria-Hungary, Germany, Great Britain, Italy, and Norway. (Military Information series 27)	paper 20c
Bacteria of river waters, by Dr. John S. Billings. (In Memoirs of National Academy of Science, v. 7)	paper $2.65, cloth $3
Ballistic tables. (Artillery circular M)	paper 25c
Ballistics, course of instructions in. (Artillery circular F.)	paper 20c
same (supplement)	paper 10c
Barracks and hospitals, report on, with descriptions of military posts. Dec. 5, 1870. (Circular 4, Surgeon-General's Office, War Department)	paper $1
Battlefields in Spottsylvania County, Va. (56th Cong., 1st sess., Senate rept. 335)	paper 5c
Cartography, list of works relating to. (Library of Congress.)	cloth 20c
Chickamauga, Chattanooga, and vicinity, atlas of battlefields of	cloth $2.10
Courts-martial manual, 1901	cloth 30c
Civil government, law of, in territory subject to military occupation by military forces of United States, report on; by C. E. Magoon	sheep $1.25
Distances, official tables of. 1902. (Adjutant-General's Office, War Department)	paper 50c
Electricity, atmospheric, studies of, by T. C. Mendenhall. 1889. (In v. 5 Memoirs of National Academy of Science.)	paper $2.15
Electricity and its application in artillery practice. (Artillery circular C.) 1893	paper 10c
Far East, select list of books with references to periodicals relating to. (Library of Congress)	cloth 30c
Field Service Regulations, U. S. Army	cloth 20c
Foreign pension systems, brief synopsis of pension laws (not civil) of foreign nations. (57th Cong., 1st sess., Senate doc. 56.)	paper 5c
Foreign services; personnel and duty in the royal navy (British); by P. de Cornulier, captain, French navy. (Naval Intelligence Office)	paper 5c
Fort Riley Military Reservation and vicinity, Kansas, geology of. 1896. (Geological Survey bulletin 137)	paper 5c
Fort Washakie military road to Buffalo Fork, Snake River, Wyoming. (55th Cong., 3d sess., House doc. 245)	paper 10c

ARMY—Continued.

- Fortifications of to-day; fire against models of coast batteries and parados; horizontal and curved fire in defense of coasts. 1883. (Engineer's report, U. S. Army) paper 25c
- Geronimo, surrender of, correspondence with General Miles relative to. 1887. (49th Cong., 2d sess., Senate ex. doc. 117.) paper 5c
- Gettysburg National Military Park Commission, annual reports 1893–1901. (57th Cong., 1st sess., Senate doc. 453.) paper 50c, cloth 65c
- Ghost dance religion and Sioux outbreak of 1890. (Ethnology Bureau, 14th annual report, pt. 2) cloth $1.50
- Greece and Turkey, military system of, including description of Greco-Turkish frontier. 1897. (Military Information series 14) paper 25c
- Greely relief expedition, proceedings of "Proteus" court of inquiry, 1883 cloth 65c
- Gun fire of United States vessels in battle of Manila Bay, effect of. (War notes 5) paper 5c
- Gunpowder and high explosives. (Artillery circular B) paper 10c
- Guns, cost of, 1903. (58th Cong., 2d sess., House doc. 440) paper 5c
- Gymnastic exercises, manual of; by H. J. Koehler, West Point, N. Y., 1904 paper 15c
- Gruson's chilled cast-iron armor, report on trial of, at Spezia, Italy, April, 1886; by D. A. Lyle. 1887 paper 50c
- Guard duty, manual of. (U. S. Army.) 1902 leather 25c
- Homing pigeons, use of, for military purposes. 1882. (Signal Service notes, no. 2, War Department) paper 5c
- Holland, submarine boat. (56th Cong., 2d sess., Senate docs. 71, 115, 122) paper 5c each
- Hospital corps drill regulations, 1902. (Navy) leather 25c
- Infantry drill regulations, 1904. (U. S. Army) leather 35c
- Insurrection against military government in New Mexico and California, 1847 and 1848. (56th Cong., 1st sess., Senate doc. 442. 1900) paper 5c
- Judge-Advocate-General of the Army, digest of opinions of. Revised edition 1901 sheep $1.25
- Latin America, newspaper directory of, September, 1897. (American Republics bulletin 90) paper 10c
- Logarithms, nature, computation, and uses of, with logarithmic tables of numbers and circular functions to ten places of decimals. 1896. (App. 12, bound in Coast and Geodetic Survey report, 1896) cloth $1.60
- Magazine arms, report of board of officers on, 1892. (App. 9 to Ordnance report 1892) cloth 50c
- Military establishment, efficiency of, report of Committee on Military Affairs on bill to increase. (56th Cong., 2d sess., House rept. 2010) paper 5c
- Military justice, to prevent failure of. (56th Cong., 1st sess., House rept. 1853) paper 5c
- Military laws of United States, 1901; by George B. Davis cloth 80c
  - same, supplement to fourth edition, showing changes to June 1, 1904, with appendices paper 10c
- Military occupation, laws of civil government under; by C. E. Magoon sheep $1.25
- Military policy of United States; by Emory Upton cloth 50c
- Military professional subjects, sources of information on. 1898. (Military information series 17) paper 30c

ARMY—Continued.

Military publications, European, selected professional papers translated from. 1898. (Military information series 18.) paper 25c

Military reservations, title and jurisdiction. 1898 ------ cloth 30c

Military telegraph lines, United States, regulations for management of. 1903. (Signal Corps manual 2) --------- cloth 15c

Military transportation over land-grant and bonded railroads, regulations governing. 1899. (Adjutant-General's Office, War Department, General order 140) ------------ paper 10c

Mountain Meadow massacre, special report on; by James H. Carleton ------------------------------------ paper 5c

Pay department, manual for. Revised to include Aug. 20, 1902. (U. S. Army) ------------------------- board binding 30c

Photography, manual of. 1896. (Signal Corps, U. S. Army.) cloth 20c

Physical drill, manual of. 1904. (U. S. Navy) -------- cloth 15c

Physical training in American colleges and universities. (Circular 5, 1885, Bureau of Education) ------------- paper 25c

Santiago de Cuba, battles and capitulation of. (War notes 1.) paper 20c

Schley, Rear-Admiral Winfield S., U. S. Navy, proceedings of court of inquiry in case of. 2 vols ------ paper $2, cloth $2.50

Seacoast defenses. (41st Cong., 2d sess., House ex. doc. 271.) paper 5c

Shorthand, teaching, practice, and literature of. (Circular 2, 1884, Bureau of Education) -------------------- paper 15c

Shorthand instruction and practice. (Circular 1, 1893, Bureau of Education) ------------------------------ paper 15c

Siege artillery drill regulations. 1898 --------------- paper 25c

Sick and wounded, transport of, by pack animals. Mar. 1, 1877. (Surgeon-General's Office, War Department circular 9.)

Signal Service, property and general regulations of. 1898. cloth 20c

Small arms, firing regulations for. 1904 ------------ leather 65c

Submarine boats, staff corps, increase, hearings before Senate Committee on Naval Affairs. (57th Cong., 1st sess., Senate doc. 395) ------------------------------------ paper 5c

Submarine cables, protection of. Conventions with foreign countries concerning. Proclamation of President Cleveland. 1885.

Survey, manual of board of. 1900. (War Department) paper 5c

Target practice and remount systems abroad. 1902. (Military information series 35) ------------------------ paper 25c

Treaties and conventions between United States and other powers, 1776–1887 ------------------------------ sheep $1.75

Treaties in force, compilation of, 1899 --------------- cloth 60c

Treaty-making powers of the Senate; by Henry Cabot Lodge. (57th Cong., 1st sess., Senate doc. 104) ------------ paper 5c

Treaty of peace between United States and Spain. Text. cloth 50c

same, map -------------------------------------- paper 90c

Traction tests on public roads; by Samuel T. Neely. 1896. (Road Inquiry bulletin 20) ---------------------- paper 10c

Venereal disease among British troops in India. (55th Cong., 3d sess., Senate doc. 85) ---------------------------- paper 5c

Veterinarians, proceedings of second annual meeting of association of experiment station, held at Omaha, Sept. 8, 1898. (Animal Industry bulletin 22) ------------------- paper 5c

BOLIVIA:

Geographical sketch, natural resources, laws, economic conditions, actual development, prospects of future growth. 1904. (American Republics Bureau) ------------------ paper $1

BOLIVIA—Continued.

Handbook of, 1892, revised to July 1, 1893. (American Republics bulletin 55) ---------- paper 40c

BREAD, DIGESTIBILITY AND NUTRITIVE VALUE OF:

1900. (Experiment Stations bulletin 85) ---------- paper 5c

1900–1902. (Experiment Stations bulletin 126) ---------- paper 5c

Bread and bread making, studies on. 1899. (Experiment Stations bulletin 67) ---------- paper 10c

same at University of Minnesota. 1901. (Experimental Stations bulletin 101) ---------- paper 10c

CATTLE:

Diseases of, and cattle feeding, special report on, 1904, revised edition ---------- cloth 65c

Lung plague or contagious pleuro-pneumonia of. (47th Cong., 1st sess., Senate ex. doc. 106) ---------- paper 10c

CHILE:

Diplomatic correspondence; correspondence with naval officers; attack on seamen of U. S. S. Baltimore at Valparaiso, January, 1892 ---------- paper 35c, cloth 50c

List of books, magazine articles, and maps relating to. (In Bureau of American Republics report, 1903, 58th Cong., 2d sess., House doc. 111, pt. 3) ---------- paper $1

CHINA:

Affairs in, by William W. Rockhill. (Appendix to Foreign Relations, 1901) ---------- cloth 30c, paper 25c

Commercial, in 1904. (In Monthly summary of commerce and finance, January, 1904) ---------- paper 35c

Commercial and industrial conditions of Japan, the Orient, and. (56th Cong., 1st sess., House rept. 484) ---------- paper 5c

Open-door policy in. (56th Cong., 1st sess., House doc. 547.) paper 5c

Public instruction in. (Circ. No. 1, 1877, Bureau of Education.) paper 5c

China and South Africa, military operations in. 1901. (Military Information series 33) ---------- paper 75c

COEUR D'ALENE MINING TROUBLES:

House Committee on Military Affairs report on, June 5, 1900. (56th Cong., 1st sess., House rept. 1999) ---------- paper 10c

Report of Brig. Gen. H. C. Merriam. (56th Cong., 1st sess., Senate doc. 24) ---------- paper 5c

same. (56th Cong., 1st sess., Senate doc. 142) ---------- paper 5c

Statement of Edward Boyce. (56th Cong., 1st sess., Senate doc. 25) ---------- paper 5c

COLONIES:

Colonial administration, 1800–1900, and list of publications relating to the theory of colonization and related topics. (In Monthly summary of commerce and finance, October, 1901.) paper 65c

Colonial army systems of Netherlands, Great Britain, France, Germany, Portugal, Italy, and Belgium. 1901. (Military Information series 34) ---------- paper 15c

Colonial systems of the world. (From Monthly summary of finance and commerce, December, 1898) ---------- paper 10c

Colonies. *See* Territorial expansion.

Colonization, government of dependencies, protectorates, and related topics, theory of, list of books with references to periodicals relating to. 2d edition. (Library of Congress.) paper 10c

COLOMBIA:
Constitution of, with historical introduction. (57th Cong., 2d sess., Senate doc. 75) ---------- paper 5c
Relations of United States with Republic of Panama and. (58th Cong., 2d sess., Senate doc. 95) ---------- paper 5c

CONSTITUTION OF THE UNITED STATES:
Documentary history of, 1786–1870, derived from records, manuscript, and rolls deposited in Bureau of Rolls and Library, State Department. 3 vols. ---------- paper $3, cloth $3.50
Select list of books on. (Library of Congress) ---------- paper 10c
Text of, with amendments, 1891 ---------- paper 5c

CONDUCT OF THE WAR, REPORT OF JOINT COMMITTEE OF CONGRESS:
1863, pt. 1 ---------- cloth 55c
  same, pt. 2 ---------- cloth 40c
  same, pt. 3 ---------- cloth 45c
1865, v. 1 ---------- cloth 60c
  same, v. 2 ---------- cloth 65c
  same, v. 3 ---------- cloth 40c
  same, supplement, pt. 1 ---------- cloth 60c
  same, supplement, pt. 2 ---------- cloth 30c

Congress. *See* Bills and resolutions.—Contested election cases.

COPYRIGHT OFFICE, LIBRARY OF CONGRESS:
Bulletins—
  No. 1, Copyright law of United States ---------- paper 5c
  No. 2, Directions for registration of copyrights ---------- paper 5c
  No. 3, Copyright enactments, 1783–1900 ---------- paper 5c, cloth 15c
  No. 4, pt. 1, Text of convention creating International Copyright Union, Sept. 5, 1887, with additional articles signed at Paris, May 4, 1896 ---------- paper 5c

CUBA:
Affairs in. [Compilation of various documents and reports of 54th and 55th Congresses relative to.] (55th Cong., 2d sess., Senate repts., v. 5) ---------- paper 50c, cloth 65c
  same, pt. 1 of above, with accompanying documents. (55th Cong., 2d sess., Senate rept. 885, pt. 1) ---------- paper 50c
  same, pts. 1 and 2 of above, without accompanying documents. (55th Cong., 2d sess., Senate rept. 885, pts. 1 and 2.) paper 5c
  same, pt. 1, extracts. (55th Cong., 2d sess., Senate doc. 230 and House doc. 405) ---------- paper 10c
Agriculture in. (In vol. 1, pt. 11, pt. 4, War Dept. report for 1900) ---------- cloth 40c
Census of—
  Bulletins—
    No. 1, Population by provinces ---------- paper 5c
    No. 2, Population by age, sex, and race ---------- paper 5c
    No. 3, Citizenship, illiteracy, and education ---------- paper 5c
  Report on. 1899 ---------- cloth $1
Citizenship, illiteracy, and education. (Cuban Census bulletin 3) ---------- paper 5c
Civil code in force in Porto Rico, Philippines, and, October, 1899. paper 20c
Civil procedure, law of, for Porto Rico and, January, 1901. paper 30c
Civil report of Major-General Brooke, military governor, 1899. cloth 40c
Coaling and naval stations, agreement between the United States and, for the lease of. February, 1903 ---------- paper 5c
Code of commerce in force in Porto Rico, Philippines, and Cuba, amended June 10, 1897 ---------- paper 20c

- CUBA—Continued.
  - Commerce of, monthly summary of paper 10c
  - Commercial and industrial condition; by Robt. P. Porter, U. S. special commissioner, Nov. 15, 1898 paper 5c
    - same, appendix, June 15, 1899 paper 20c
  - Commercial convention with, Dec. 11, 1902. (57th Cong., 2d sess., Executive I) paper 5c
  - Commercial notes of. 1904. (In Consular report 280) paper 15c
  - Convention between United States and, act to carry into effect. (Public no. 1, 58th Cong., 2d sess.) paper 5c
  - Copyright, patents, and trade-marks in. (In Monthly summary of commerce and finance, 1903) paper 35c
  - Criminal procedure of Porto Rico and, law of, with Spanish text, notes, etc. Oct. 1, 1901 paper 40c
  - Customs tariff: Rates 1900 and 1904, with rulings, decisions, etc., affecting tariff. (In Monthly summary of finance and commerce, February, 1904) paper 50c
  - Customs tariff and regulations for ports in possession of the United States, Aug. 8, 1898 paper 5c
    - same, amended. Dec. 17, 1898 paper 10c
  - Eminent domain of Porto Rico and, law of, extended by royal decree of June 13, 1884, to, and regulations for its application. March, 1901 paper 5c
  - Free government in, establishment of, Apr. 27, 1904. (58th Cong., 2d sess., Senate doc. 312) paper 5c
  - Gazetteer of. 1902. (Geological Survey bulletin 192) paper 30c
  - Inauguration of President of, May 20, 1902. (57th Cong., 1st sess., Senate doc. 363) paper 5c
  - Labor conditions in. (Labor bulletins 41 and 42.) paper 10c and 25c
    - same, 1902. (In Monthly summary of commerce and finance, August, 1903) paper 35c
    - same. (In Monthly summary of commerce and finance, October, 1903) paper 35c
  - Land, purchase of, by nonresidents, since date of American occupation. Dec. 2, 1902. (57th Cong., 2d sess., House doc. 51.) paper 5c
  - List of books relating to, with bibliography of maps (Library of Congress), 1898. (55th Cong., 2d sess., Senate doc. 161.) paper 5c
  - Military government by the United States in island of, and all islands evacuated by Spain May 8, 1899, rules and instructions to carry into effect executive orders relating to paper 5c
- DANISH WEST INDIES:
  - Cession of, to the United States. (57th Cong., 1st sess., Senate doc. 284) paper 5c
  - List of books with references to periodicals on. (Library of Congress) paper 5c
  - Purchase of, report of select committee on, June 1, 1902. (57th Cong., 1st sess., House rept. 2749) paper 10c
- Darien, ship canals in Isthmus of. (56th Cong., 1st sess., Senate doc. 389) paper 5c
- ECUADOR:
  - Handbook of, 1892, revised to Apr. 1, 1894. (American Republics bulletin 64) paper 35c
- ENGINEER DEPARTMENT, WAR DEPARTMENT, PROFESSIONAL PAPERS:
  - No. 24, 1882. Primary triangulation, United States lake survey. cloth $1.25
  - No. 25, 1883. Practice in Europe with heavy rifled guns cloth 40c
  - No. 28, 2d edition, 1902. Testing hydraulic cements cloth 15c

Engineering Methods on Fortifications, Rivers and Harbors, and other Works, Technical Details of, from Reports of Chief of Engineers:
- 1902 -------------------- paper 65c
- 1903 -------------------- paper 65c
- 1904 -------------------- paper $2.40

Engineer's reports, War Department. *See* War Department, annual reports.

Engineer Reports, Index to:
- 1880–1887, by Henry M. Robert -------------------- cloth 50c
- 1888–1892, by C. W. Raymond -------------------- cloth 45c
- 1866–1900, by C. W. Raymond. 3 vols ----- paper 95c, cloth $1.35

Food:
- Adulteration of—
  - Europe. (In Consular report 277) -------------------- paper 15c
  - misbranding and imitation of foods, etc. (57th Cong., 1st sess., House rept. 1319) -------------------- paper 5c
  - popular treatise on extent and character of. 1890. (Chemistry bulletin 25) -------------------- paper 5c
  - report from Senate Committee on Manufactures, February, 1900. (56th Cong., 1st sess., Senate rept. 516, v. 3) - cloth 50c
  - review and digest of testimony before Industrial Commission, 1899–1900. (56th Cong., 2d sess., Senate doc. 141.) paper 10c
- Food consumption, digestion, and metabolism, effect of severe and prolonged muscular work on. 1901. (Experiment Stations bulletin 98) -------------------- paper 5c
- Food laboratories, suggestions for establishment of, in connection with the experiment stations of the United States. 1893. (Experiment Stations bulletin 17) -------------------- paper 5c
- Food materials, American, chemical composition of. 1899. (Experiment Stations bulletin 28, revised) -------------------- paper 5c
- Food of Maine lumbermen. 1904. (Experiment Stations bulletin 149) -------------------- paper 10c
- Food preservatives and artificial colors, influence of, on digestion and health. Boric acid and borax. (Chemistry bulletin 84, pt. 1) -------------------- paper 30c
- Foods, methods of analysis of, provisional, adopted by the Association of Official Agricultural Chemists. (Chemistry bulletin 65) -------------------- paper 10c
- Refrigerators and food preservation in foreign countries, 1890. (From special consular reports, v. 2) -------------------- paper 25c

Forage Crops:
- Forage conditions and problems in eastern Washington, eastern Oregon, northeastern California, and northwestern Nevada, report on. (Plant Industry bulletin 38) -------------------- paper 15c
- Forage conditions on northern border of Great Basin, being a report upon investigations made during July and August, 1901, in region between Winnemucca, Nev., and Ontario, Oreg. (Plant Industry bulletin 15) -------------------- paper 15c
- Cultivated, of Northwestern States. (Plant Industry bulletin 31.) paper 10c
- In Nebraska. (Plant Industry bulletin 59) -------------------- paper 10c

Forage plants and forage resources of Gulf States. (Agrostology bulletin 15) -------------------- paper 5c

Foreign Relations, Annual Reports on (State Department):
- 1898 -------------------- cloth 80c
- 1899 -------------------- cloth 65c
- 1900 -------------------- cloth 75c
- 1901 -------------------- cloth 40c
  - same, Appendix. (Rockhill's report on China) -------------------- cloth 30c

FOREIGN RELATIONS, ETC.—Continued.	
1902	cloth 75c
same, Appendix 1. Whaling and sealing claims against Russia.	cloth 40c
same, Appendix 2. Pius funds of California	cloth 60c
1903	cloth 60c
Foreign Relations, Committee on, United States Senate, compilation of reports of, 1789–1901. (56th Cong., 2d sess., Senate doc. 231, vols. 19–26)	cloth $5.40
FORESTRY:	
In Europe, reports from consuls of United States, 1887	paper 20c
Investigations and work of Department of Agriculture, 1877–1898. (55th Cong., 3d sess., House doc. 181)	paper $1; cloth $1.35
List of publications relating to, in Department library. 1898. (Library bulletin 24)	paper 15c
Practical, in the Adirondacks. (Forestry bulletin 26)	paper 15c
Primer of, pt. 1; by Gifford Pinchot, 1899. (Forestry bulletin 24)	cloth 35c
What it means to representative men; portions of addresses delivered at American Forest Congress, Jan. 3–6, 1905. (Forestry Circular 33)	paper 5c
Forest and shade trees, insects injurious to. (Entomological Commission, 5th report)	cloth $1.50
Forest laws, Federal and State. 1904. (Forestry bulletin 57.)	paper 15c
Forest nursery, collection of tree seeds and propagation of seedlings. (Forestry bulletin 29)	paper 10c
Forest trees of North America. (10th Census, v. 9)	cloth $1.25
Forest trees of United States, checklist of. 1898. (Forestry bulletin 17)	paper 15c
Forests in Northwest, insect enemies of. (Entomology bulletin 21, new series)	paper 5c
FUR SEAL ARBITRATION, 1893:	
v. 1	cloth 35c
v. 2	cloth $1
v. 3	cloth 70c
v. 4	cloth 45c
v. 5	cloth 80c
v. 6	paper 20c
v. 7	cloth 70c
v. 8	cloth 70c
v. 9	cloth 50c
v. 10	cloth 20c
v. 11	cloth 20c
v. 12	cloth 35c
v. 13	cloth 50c
v. 14	cloth 30c
v. 15	cloth 30c
v. 16	paper 15c, cloth 25c
16 vols	set, cloth, $7.65
Fur-seal catch, 1897	paper 5c
FUR SEA INVESTIGATIONS, 1896–97 (JORDAN):	
pt. 1	cloth 75c
pt. 2	cloth 65c
pt. 3	cloth $1.25
pt. 4	cloth $1.75
Fur seals of Pribilof Islands, observations on. 1896	paper 5c
GAME:	
Digest of laws, for 1901. (Biological Survey bulletin 16.)	paper 10c
Laws regulating transportation and sale of. (Biological Survey bulletin 14)	paper 10c

GATHMANN GUN, TESTS OF:	
56th Cong., 1st sess., Senate doc. 341	paper 5c
56th Cong., 2d sess., House doc. 194	paper 5c
57th Cong., 1st sess., Senate doc. 53	paper 35c
57th Cong., 1st sess., House doc. 628	paper 5c
Gathmann system of firing high explosives. (55th Cong., 3d sess., Senate doc. 120)	paper 5c
GEOGRAPHIC NAMES, UNITED STATES BOARD:	
1st report, 1890–91	cloth 15c
2d report, 1890–1899, second edition	cloth 20c
Special report relating to geographic names in Philippine Islands.	paper 5c
Geographic positions, azimuths, and distances, tables of, 1883. (Unclassified publication of Wheeler's geographical surveys west of the one-hundredth meridian)	cloth 75c
Geographic tables and formulas. 1903. (Geological Survey bulletin 214)	paper 15c
Same. [2d edition.] 1904. (Geological Survey bulletin 234.)	paper 20c
GEOGRAPHICAL AND GEOLOGICAL SURVEY OF THE ROCKY MOUNTAIN REGION, CONTRIBUTIONS TO NORTH AMERICAN ETHNOLOGY (POWELL):	
v. 2, pt. 2. Klamath Indians of southwestern Oregon	cloth $1.20
v. 6. Cegiha language	cloth $1
v. 9. Dakota grammar, texts and ethnography	cloth 90c
Geographical congress, 3d international, report of United States commissioner, 1881	cloth $1.10
GRASSES:	
American, description of, tribes and genera—	
no. 1. (Agrostology bulletin 7)	cloth 30c
no. 2. (Agrostology bulletin 17)	paper 20c
no. 3. (Agrostology bulletin 20)	paper 15c
New and noteworthy, from United States, description of, by George Vasey. (National Herbarium, v. 1, no. 8)	paper 10c
Pacific coast, notes on some, by George Vasey. (National Herbarium, v. 1, no. 8)	paper 10c
Iowa, grasses and forage plants of, notes on. (Agrostology bulletin 9)	paper 5c
GRASSES AND FORAGE PLANTS:	
Colorado, notes on. (Agrostology bulletin 9)	paper 5c
Cooperative experiments with. (Agrostology bulletin 22)	paper 15c
Seed distribution and cooperative experiments with, records of. (Plant Industry bulletin 10)	paper 10c
Forage conditions of eastern Rocky Mountain region and. (Agrostology bulletin 12)	paper 5c
Central Texas. (Arostology bulletin 10)	paper 5c
Dakotas. (Agrostology bulletin 6)	paper 5c
Iowa, Nebraska, and Colorado, notes on. (Agrostology bulletin 9)	paper 5c
Rocky Mountain region. (Agrostology bulletin 5)	paper 5c
Southeastern States, notes on. (Agrostology bulletin 1)	paper 5c
Grazing problems in Southwest and how to meet them. (Agrostology bulletin 16)	paper 5c
GREAT LAKES:	
Ship canal from, to the navigable waters of the Hudson River. (52d Cong., 1st sess., House rept. 1023)	paper 5c
same. (55th Cong., 1st sess., House doc. 86)	paper 25c
War vessels on. (56th Cong., 1st sess., House doc. 471.) 1900.	paper 5c

GUATEMALA:

Handbook of, January, 1892. (American Republics bulletin 32.) paper 35c

Republic of, 1897. (American Republics special bulletin, February, 1897. [American Republics bulletin 68]) ---- paper 25c

GULF STATES:

Forage plants and forage resources of. (Agrostology bulletin 15.) paper 5c

GUN CARRIAGES, DISAPPEARING:

Cost and number of. 1902. (57th Cong., 1st sess., Senate doc. 354) ---- paper 5c

For seacoast fortifications. 1900. (56th Cong., 1st sess., Senate doc. 332) ---- paper 5c

HAITI:

Handbook of, 1892, revised to Sept. 1, 1893. (American Republics bulletin 62) ---- paper 35c

HAWAII:

Agricultural resources and capabilities of. 1901. (Experiment Stations bulletin 95) ---- paper 20c

Appropriation, estimate of. (56th Cong., 2d sess., House doc. 64.) paper 5c

same, additional documents relating to. (56th Cong., 2d sess., House doc. 357) ---- paper 10c

Bubonic plague in, suppression of. (57th Cong., 1st sess., Senate rept. 1933) ---- paper 10c

Cable between United States and Guam, Philippine Islands, and. (57th Cong., 1st sess., House rept. 568) ---- paper 5c

Forests of. 1904. (Forestry bulletin 48) ---- paper 10c

Government for, report of House Committee on Territories. (56th Cong., 1st sess., House rept. 305) ---- paper 10c

Government of. (56th Cong., 1st sess., Senate rept. 1305.) paper 5c

Handbook of, August, 1897. (American Republics bulletin 85.) paper 25c

Irrigation in, 1901. (Experiment Stations bulletin 90) - paper 10c

Legislation for, report of Senate Committee on Commerce. (56th Cong., 1st sess., Senate rept. 31) ---- paper 5c

List of books and references to collected works and periodicals relating to. (Library of Congress) ---- paper 5c

Report on, 1902. (Labor bulletin 47) ---- paper 15c

HONDURAS:

Geographical sketch, natural resources, laws, economic conditions, actual development, prospect of future growth, 1904. (Bureau of American Republics) ---- paper $1

HORSES:

American, in foreign countries, special report on market for. 1899. (Bureau of Animal Industry) ---- paper 10c

Market classes of. (Animal Industry bulletin 37) ---- paper 15c

Horse, diseases of, special report on, 1903. (Revised edition.) cloth 65c

Horse feeding, experiments on. 1903. (Experiment Stations bulletin 125) ---- paper 5c

Surra, emergency report on. (Animal Industry bulletin 42.) paper 15c

INSECT ENEMIES OF:

Forests and forest products, catalogue of exhibits of, at Louisiana Purchase Exposition, 1904. (Entomology bulletin 48, new series) ---- paper 15c

Forests in Northwest. (Entomology bulletin 21, new series.) paper 5c

INSECT ENEMIES OF—Continued.
Pine in Black Hills Forest Reserves. (Entomology bulletin 32, new series) ---------- paper 10c
Spruce in Northeast, with recommendations for preventing losses. (Entomology bulletin 28, new series) ---------- paper 10c
Insect pests and plant diseases, proceedings of convention for suppression of. 1897. (Agriculture Department report 57.) paper 5c
Insecticide studies. (Chemistry bulletin 76) ---------- paper 5c
Insecticides and fungicides, chemical composition of, with an account of methods of analysis employed. (Chemistry bulletin 68.) paper 5c
INSECTS:
Affecting domestic animals. (Entomology bulletin 5, new series.) paper 20c
Injurious—
garden and orchard crops. (Entomology bulletin 19, new series) ---------- paper 10c
garden crops. (Entomology bulletin 23, new series.) paper 10c
recent laws against, in North America, together with laws relative to foul brood. (Entomology bulletin 13, new series.) paper 5c
Mosquitoes of United States, notes on. (Entomology bulletin 25, new series) ---------- paper 5c
INSULAR COMMISSION, UNITED STATES:
Civil affairs in Porto Rico, report on, with recommendations, June 9, 1899 ---------- paper 10c
Investigations of civil affairs in Philippine Islands, report on, with recommendations, June 9, 1899 ---------- paper 10c
Insular cases, comprising records, briefs, and arguments of counsel in, of October term, 1900, in the Supreme Court of United States, including appendixes ---------- cloth 75c
INTERNATIONAL LAW DIGEST, BY FRANCIS WHARTON. 2D EDITION. 1887.
v. 1 ---------- sheep $1.25
v. 2 ---------- sheep $1.25
v. 3 ---------- sheep $1.50
International law lectures; by Freeman Snow. 1895 ---------- sheep 85c
International law situations, 1896, naval war college, discussions by officers in attendance ---------- paper 5c
International American conference, 1890. 4 v ---------- paper $2.15
same, reports adopted relating to subject of international arbitration. (51st Cong., 1st sess., Senate ex. doc. 224) ---------- paper 25c
International and commercial relations between United States and several countries of Central and South America. (48th Cong., 2d sess., House ex. doc. 226) ---------- paper 30c
International arbitration, history, digest, and maps; by John Bassett Moore, 6 vols ---------- sheep $11
International conference, second, of American States, held at City of Mexico, 1901–2. (57th Cong., 1st sess., Senate doc. 330.) paper 15c, cloth 25c
International congress of engineers, held at Chicago, proceedings of, 1893. (53d Cong., 2d sess., Senate ex. doc. 119) ---------- cloth $1.50
International disputes, pacific settlement of, convention at The Hague, 1899, President Roosevelt's proclamation concerning. 1901. paper 5c
International law, treaties, and kindred subjects, digest of published opinions of Attorney-General and of the leading decisions of Federal courts. 1876 ---------- cloth 30c
International law and practice, list of references on recognition in. (Library of Congress) ---------- paper 10c

INTERNATIONAL PRISON CONGRESS:
- 3d, Rome, October, 1884. (Circular 1, 1884, Bureau of Education) ---------- paper 5c
- 4th, St. Petersburg, Russia. (Circular 2, 1891, Bureau of Education) ---------- paper 15c
- 5th, Paris, 1895, report of United States delegates. (54th Cong., 1st sess., Senate doc. 181) ---------- paper 10c, cloth 15c
- 6th, Brussels, Belgium, August, 1900 ---------- paper 5c, cloth 15c
- International Penitentiary Congress, London, 1872, report of United States commissioner. (42d Cong., 2d sess., Senate doc. 39) ---------- cloth 30c
- International Prison Commission, report of. 1899. (55th Cong., 3d sess., Senate doc. 53) ---------- paper 5c
- Penological questions, reports prepared for the International Prison Commission; by S. J. Barrows. (55th Cong., 3d sess., Senate doc. 158) ---------- paper 5c

INTEROCEANIC CANALS:
- Clayton-Bulwer treaty and Monroe doctrine, and the treaty between United States and New Granada, Dec. 12, 1846, and correspondence relating to. (56th Cong., 1st sess., Senate doc. 237) ---------- paper 30c
- Correspondence and other papers relating to the proposed. (56th Cong., 1st sess., Senate doc. 161) ---------- paper 15c
- Documents relating to. (57th Cong., 1st sess., Senate doc. 357.) paper 5c
- Hearings before Senate Committee on, Mar. 14, 1902. (57th Cong., 1st sess., Senate doc. 253, pt. 1) ---------- paper 20c
  - same. (57th Cong., 1st sess., Senate doc. 253, pt. 2) - paper 25c
  - same. (57th Cong., 1st sess., Senate doc. 253, pt. 3) - paper 20c
- Proposed, between Atlantic and Pacific oceans, the Clayton-Bulwer treaty and Monroe doctrine, correspondence in relation to. (56th Cong., 1st sess., Senate doc. 161) ---------- paper 15c
- Reports of Committee on: [Senate] reports nos. 1337, pts. 1–6, 114, and 1649, 56th Cong., 1st and 2d sess.; message transmitting convention [with] Great Britain; reports of majority and minority of Committee on Foreign Relations. 1902 ---------- paper 25c
- Senate and House committees and Isthmian Canal Commission, reports relative to. (57th Cong., 1st sess., House rept. 15.) paper 15c
- Senate committee report on proposed ship canals through the American Isthmus. 1901 ---------- paper 30c

Interoceanic communication by way of American Isthmus, problem of; by Lieut. John T. Sullivan. (Bureau of Navigation, Navy Department) ---------- cloth $1
- Great canals of the world, monograph on. (58th Cong., 1st sess., Senate doc. 20) ---------- paper 10c

ISTHMIAN CANAL:
- Letters and papers relating to construction of an. (57th Cong., 1st sess., Senate doc. 303) ---------- paper 5c
- Proceedings of meeting held under auspices of the American association of China on. (56th Cong., 1st sess., Senate doc. 230) ---------- paper 5c
- Report, with views of the minority, from Committee on Interoceanic Canals. (57th Cong., 1st sess., Senate report 783, pts. 1 and 2) ---------- paper 5c each
- Tehuantepec, Isthmus of, report of explorations and surveys for a ship canal by way of. (Navy Department) ---------- cloth $2

ISTHMIAN CANAL COMMISSION:
- Expenditures of. (57th Cong., 2d sess., Senate doc. 88) - paper 5c
- Preliminary report of. Nov. 30, 1900. (56th Cong., 2d sess., Senate doc. 5) ---------- paper 5c

LABOR:

Bulletin No. 1. Strikes and lockouts in United States, Great Britain, Ireland, France, Italy, and Austria. Private and public debt of United States. Employer and employee under common law, etc---------- paper 10c

MAMMALS:

American, description of 14 new species and 1 new genus of. (North American fauna 2)---------- paper 10c

North American, description of 26 new species of. (North American fauna 4)---------- paper 10c

Small, directions for preparing study specimens of. (National Museum bulletin 39, pt. N)---------- paper 5c

MAPS:

Topographic maps—

The Geological Survey is making a topographic map of the United States; about one-third of the area of the country has been mapped. These maps are sold by the Director of the Geological Survey, at 5c a sheet, or in lots of 100 or more at 2c a sheet.

Land Office map of U. S. and possessions, etc.—

Large maps of the United States and possessions, 58 by 85 inches, 80c, and sheet maps of States in which public lands are for sale, price 12c a sheet, are sold by the chief clerk, Department of Interior, Washington, D. C.

Post-route maps of the States and Territories—

Sold by the chief clerk, Post-Office Department, at prices from 80c to $3.20.

MEDICAL AND SURGICAL HISTORY OF THE WAR OF THE REBELLION:

Complete work, in six volumes---------- per set, cloth $38

Extent and nature of materials available for preparation of. Nov. 1, 1865. (Surgeon-General's Office, War Department, circular 6)---------- paper 50c

MEDICAL AND VETERINARY ZOOLOGY, INDEX CATALOGUE OF. (Animal Industry bulletin 39):

Pt. 1---------- paper 5c
Pt. 2---------- paper 10c
Pt. 3---------- paper 10c
Pt. 4---------- paper 5c
Pt. 5---------- paper 5c
Pt. 6---------- paper 5c
Pt. 7---------- paper 5c
Pt. 8---------- paper 5c
Pt. 9---------- paper 5c
Pt. 10---------- paper 5c
Pt. 11---------- paper 5c

Medical education and medical institutions in United States, 1776 to 1876, by N. S. Davis. (Bureau of Education, 1877)- paper 5c

Medical progress and medical education in United States before and during the war of Independence, by Joseph M. Toner. (Bureau of Education.) 1874---------- paper 10c

MEXICO:

Commercial. (In Monthly Summary of Commerce and Finance, Feb., 1905)---------- paper 35c

Geographical sketch—

natural resources, laws, economic conditions, actual development, prospects of future growth. 1904. (Bureau of American Republics)---------- paper $1

with special reference to economic conditions and prospects of future development. 1900. (In Bureau of American Republics report, 1900, pt. 3, 56th Cong., 2d sess., House doc. 181, pt. 3)---------- paper 75c

Labor conditions in. (Labor bulletin 38)---------- paper 10c

Military Academy:	
Centennial of. 2 v., illustrated	cloth $2
Military Information Series, General Staff, U. S. A.:	
No. 7. Organized militia of the United States in 1895	paper 35c
No. 14. Military systems of Greece and Turkey	paper 25c
No. 17. Sources of information on military professional subjects, November, 1897	paper 30c
No. 18. Selected professional papers translated from European military publications, January, 1898	paper 25c
No. 19. Organized militia of the United States in 1897	paper 80c
No. 20. Military notes on the Philippines, September, 1898.	paper 75c
No. 22. Staffs of various armies. January, 1899	paper 20c
No. 25. Explorations in the Territory of Alaska, 1898. (Cooks Inlet, Sushitna, Copper, and Tanana rivers)	paper 45c
No. 26. Autumn maneuvers of 1898 in Austria-Hungary, France, Germany, Great Britain, Russia, and Switzerland	paper 25c
No. 27. Same, 1899	paper 20c
No. 29. Organized militia of United States, 1898	paper 25c
No. 31. Exploration in Alaska, 1899	paper 25c
No. 32. Notes of military interest, 1900	paper 50c
No. 33. Military operations in South Africa and China	paper 75c
No. 34. Colonial army systems, November, 1901	paper 15c
No. 35. Target practice and remount systems abroad	paper 25c
No. 36. Notes of military interest, 1901	paper $1
No. 38. Notes of military interest for 1902	paper $1
Military Interest, Notes of:	
1900. (Military information series 32)	paper 50c
1901. (Military information series 36)	paper $1
1902. (Military information series 38)	paper $1
Military Posts:	
Descriptions of. (Circular 4, War Department, Surgeon-General's Office, Dec. 5, 1870)	paper $1
same. (Surgeon-General's Office, War Department, circular 1.)	paper 50c
Sites for. Preliminary examinations and surveys. 1902. (57th Cong., 1st sess., House doc. 618)	paper $3
Militia of United States:	
Abstract of returns of. 1901. (56th Cong., 2d sess., House doc. 409)	paper 5c
Efficiency of. (57th Cong., 1st sess., House rept. 1094)	5c
Organized—	
1895. (Military information series 7)	paper 35c
1897. (Military information series 19)	paper 80c
1898. (Military information series 29)	paper 25c
Naval Intelligence Office:	
General information series (information from abroad)—	
No. 4. Papers on naval operations during year ending July, 1885	paper 25c
No. 6. Recent naval progress. June, 1887	cloth 40c
No. 7. Naval reserves, training and matériel. June, 1888.	cloth 50c
No. 8. Naval mobilization and improvement in matériel. June, 1889	cloth 50c
No. 9. Year's naval progress. June, 1890	cloth 50c
No. 10. Year's naval progress. July, 1891	cloth $1.10
No. 12. International Columbian naval rendezvous and review of 1893 and naval manœuvres of 1892. August, 1893.	cloth 35c
No. 13. Notes on year's naval progress. July, 1894	paper $1

NAVAL INTELLIGENCE OFFICE—Continued.
General information series—Continued.
No. 16, pt. 2. Notes on naval progress. January, 1897. paper 25c
No. 18, pt. 1. Notes on naval progress. April, 1899.... paper 10c
No. 18. Notes on naval progress. November, 1899. [No. 18, pt. 1, included as [chap.] 11]........ paper 50c
No. 21. Notes on naval progress. July, 1902...... paper $1.65

This series of publications, which contains 21 volumes, 1882–1902, was discontinued July 1, 1903.

War notes, nos. 1–8.................. cloth 90c

Contents:
No. 1. Battles and capitulation of Santiago de Cuba.
No. 2. Comments of Rear-Admiral Pluddeman of the German navy on the main features of the war with Spain.
Nos. 3 and 4. Sketches from the Spanish-American War (Jacobsen).
No. 5. Effect of the gun fire of the U. S. vessels in the battle of Manila Bay.
No. 6. Blockades and coast defenses.
No. 7. Documents relative to squadron operations in West Indies, arranged by Admiral Cervera.
No. 8. The squadron of Admiral Cervera.

NAVAL WAR RECORDS, SERIES 1:

v. 1	cloth 75c
v. 2	cloth 75c
v. 3	cloth 65c
v. 4	cloth 65c
v. 5	cloth 70c
v. 6	cloth 70c
v. 7	cloth 70c
v. 8	cloth 75c
v. 9	cloth 75c
v. 10	cloth 70c
v. 11	cloth 70c
v. 12	cloth 75c
v. 13	cloth 75c
v. 14	cloth 75c
v. 15	cloth 60c
v. 16	cloth 65c

NAVY:
Growth and present strength of and the comparative naval strength of the great powers, tables showing, 1904. (58th Cong., 2d sess., Senate doc. 195).......... paper 5c
same, 1905. (58th Cong., 3d sess., Senate doc. 117).... paper 5c
Hospital Corps drill regulations. 1902........ leather 25c
Naval Academy, historical sketch of; by James Russell Soley. 1876.................. cloth 50c
Naval education, foreign systems of; by James Russell Soley. 1880.................. cloth 50c
Navies of the world in 1898, principal; by Constructor Süssenguth, German navy. (General information series 18, pt. 1.) paper 10c
Marine Corps, U. S., manual of practical instructions to officers of, in field work. 1903.............. paper 10c
Ordnance and gunnery, manual of instruction in, for United States naval training service. 1900.......... cloth 15c

NICARAGUA:
Handbook of, 1892, revised to Aug. 1, 1903. (American Republics bulletin 51)................ paper 35c
Treaty between United States and, 1867. (54th Cong., 1st sess., Senate doc. 133).................. paper 5c

NICARAGUA CANAL:
Construction of, report on. (56th Cong., 1st sess., House rept. 351, pts. 1 and 2.............. each paper 5c

NICARAGUA CANAL—Continued.

- Convention between United States and Great Britain to facilitate construction of. (56th Cong., 1st sess., Senate doc. 160). paper 5c
- Dutton's report on, in 1892. (52d Cong., 1st sess., Senate misc. doc. 97) ---------- paper 5c
- Memorial concerning possibilities, advantages, and means of opening a canal in North America to communicate between the Atlantic and Pacific oceans. (56th Cong., 2d sess., Senate doc. 157) ---------- paper 5c
- Morgan's report from Select Committee on Construction of. (54th Cong., 1st sess., Senate rept. 1109) ---------- paper 25c
  - same. (55th Cong., 2d sess., Senate rept. 1265) ---------- paper 10c
- Paper published in New York Times of Dec. 12, 1900, entitled "A canal or a fort," on. (56th Cong., 2d sess., Senate doc. 47) ---------- paper 5c
- Reports of Committee on Foreign Relations of the Senate in 51st, 52d and 53d Congresses, with subject index ---------- paper 15c
- Statement before Select Committee on Construction of, United States Senate, June 15, 16, and 17, 1898. (55th Cong., 2d sess., Senate doc. 341) ---------- paper 5c
- Strategic and commercial value of, the future control of the Pacific Ocean, the strategic value of Hawaii, and its annexation to the United States. Views of Commodore Melville on ---------- paper 5c
- Treaties relating to. (55th Cong., 2d sess., Senate doc. 291, bound in v. 26 with other documents) ---------- cloth 60c

Nicaragua canal board, report, 1895. (54th Cong., 1st sess., House doc. 279, pt. 1) ---------- paper 10c

- same, with appendices and maps ---------- cloth 70c

Nicaragua Canal or the Maritime Canal Company of Nicaragua, report of the Secretary of State with correspondence relating to. (54th Cong., 2d sess., Senate doc. 184) ---------- paper 10c

Nicaragua surveying party, report of, 1885, by A. G. Menocal. paper $2.10

NOME, CAPE, ALASKA:

- History of discovery of gold at; by H. L. Blake. (56th Cong., 1st sess., Senate doc. 441) ---------- paper 5c
- Preliminary report on gold region; by F. C. Schrader and A. H. Brooks, of the U. S. Geological Survey. (56th Cong., 1st sess., Senate doc. 236) ---------- paper 15c
- Reconnoissance in Norton Bay region and, in 1900 ---------- paper 50c

ORDNANCE MEMORANDA:

- No. 14. Metallic cartridges as manufactured and tested at Frankford Arsenal; prepared by T. J. Treadwell. 1873 ---------- cloth $1
- No. 18. Proceedings of board of officers on horse equipments, cavalry equipments, and accouterments, etc., with action of War Department thereon. 1874 ---------- cloth $1
- No. 22. Fabrications of small arms; prepared by J. G. Benton and others. 1878 ---------- paper $1
- No. 23. Machines for siege and garrison service, mechanical maneuvers, etc.; prepared by Ordnance Board. 1879. paper $1
- No. 25. Manufacture of coiled wrought-iron tubes, for conversion of 10-inch Rodman smooth-bore guns into 8-inch rifles, by Rogers Birnie. [1884] ---------- cloth $1
- No. 26. Manufacture of life-saving guns and projectiles; [by Rogers Birnie. 1884] ---------- cloth $1
- No. 27. Hotchkiss revolving cannon; by H. D. Borup. 1886. cloth $1
- No 29. Horse equipments and cavalry accouterments. 1891. cloth $1
- Ordnance reports [Army]. *See* War Department reports.

PANAMA CANAL:

- Advantages of route, certain. (57th Cong., 1st sess., Senate doc. 245) ---------- paper 5c
- Convention between United States and Republic of Colombia for the construction of, Jan. 22, 1903. (57th Cong., 2d sess., Senate executive K) ---------- paper 5c
- Convention between United States and Republic of Panama for the construction of, Feb. 26, 1904 ---------- paper 5c
- Letters from Colombian minister respecting. (57th Cong., 1st sess., House doc. 611) ---------- paper 5c
- Papers setting forth certain concessions and laws of Colombia relating to. (57th Cong., 2d sess., Senate doc. 114) - paper 5c
- *See also* Interoceanic canals.
- Pan-American Railway, report of C. M. Pepper on, with map. (58th Cong., 2d sess., Senate doc. 206) ---------- paper 15c
- Panama, five years at. Extracts from "Five years at Panama," by Wolfred Nelson. (57th Cong., 1st sess., Senate doc. 401.) paper 5c
- Panama and Colon, commerce and industries of, 1904. (In Consular report 281) ---------- paper 15c
- Panama and Nicaragua, letter of Commodore M. F. Maury to Captain Bedford Pim on, July, 1866. (58th Cong., 2d sess., Senate doc. 83) ---------- paper 5c

PARAGUAY:

- Handbook of, 1892, revised to Oct. 15, 1894. (American Republics bulletin 54) ---------- paper 30c

PHILIPPINE ISLANDS:

- Affairs in, hearing before Committee on Philippines of United States Senate. (57th Cong., 1st sess., Senate doc. 331, pts. 1, 2, and 3) ---------- paper $2.10
- Aguinaldo, communications between Executive Departments of the Government. (56th Cong., 1st sess., Senate doc. 208, pt. 1) ---------- paper 15c
- Armed vessels, warships, etc., sent to, since May 1, 1898. (56th Cong., 2d sess., Senate doc. 22) ---------- paper 5c
- Atlas of. (Coast and Geodetic Survey special publication 3.) paper $2.65, cloth $3.15
- Bibliography of. (English and Spanish.) (57th Cong., 2d sess., Senate doc. 74) ---------- paper 45c, cloth 60c
- Civil affairs in administration of. (57th Cong., 1st sess., House rept. 1540) ---------- paper 5c
  - same. (57th Cong., 1st sess., Senate rept. 915) ---------- paper 5c
  - *See also* Insular Commission.
- Civil code in force in Cuba, Porto Rico, and. October, 1899. paper 20c
- Civil government in—
  - act temporarily to provide for the administration of affairs of. Approved July 1, 1902. (Public 235) ---------- paper 5c
  - report relative to. (57th Cong., 1st sess., House rept. 2496.) paper 5c
- Civil service of, official register of officers and employees in the civil service of. January, 1902 ---------- paper 10c
- Coal measures of, history of discovery of coal in Philippine Islands; full text of record of MacLeod coal concession in Cebu. August, 1901 ---------- paper 40c
- Commercial code in force in Cuba, Porto Rico, and. Amended June 10, 1897 ---------- paper 20c
- Conditions in—
  - editorial correspondence of the Evening Star, Washington, D. C., by Theodore W. Noyes, relative to. (56th Cong., 1st sess., Senate doc. 432) ---------- paper 5c

Philippine Islands—Continued.	
Conditions in—Continued.	
matters relating to. (58th Cong., 2d sess., Senate doc. 170.)	paper 5c
proclamation regarding. (56th Cong., 2d sess., Senate doc. 167)	paper 5c
Cruelty to natives of, charges of. (57th Cong., 1st sess., Senate doc. 205, pts. 1 and 2)	paper 25c
Currency and exchange in, memorandum for Secretary of War. Dec. 8, 1900. (56th Cong., 2d sess., House doc. 160)	paper 5c
Customs tariff, correspondence relating to. (57th Cong., 1st sess., Senate doc. 171)	paper 20c
Education in, report of General MacArthur and other military officers on. (56th Cong., 2d sess., Senate doc. 129)	paper 5c
Expenditures in, since May, 1898. 1902. (57th Cong., 1st sess., Senate doc. 416)	paper 5c
Federal party, message of, to United States Congress. November, 1901. (57th Cong., 1st sess., Senate doc. 187)	paper 5c
Financial and industrial conditions, by Edward W. Harden. Nov. 30, 1898	paper 5c
Geographic names, report of special board on. May, 1901.	paper 5c
Hostilities, petition favoring suspension of. (57th Cong., 1st sess., Senate doc. 166)	paper 5c
List of books with references to periodicals in Library of Congress on. (Library of Congress)	paper 40c, cloth 60c
same, Spanish	paper 40c, cloth 60c
Military notes on. 1898. (Military information series 20.)	paper 75c
Military officers, orders and instructions issued to. (57th Cong., 1st sess., House doc. 596)	paper 5c
Mining laws of. July, 1900	paper 5c
Monthly summary of commerce and finance	each paper 10c
Mortgage law for Cuba, Porto Rico, and. 1893	paper 10c
Moro dialect, primer and vocabulary of. October, 1903	paper 5c
Municipal government in. (56th Cong., 1st sess., House doc. 659)	paper 5c
Naval station in, establishment of. (57th Cong., 1st sess., House doc. 140)	paper 25c
Notarial laws in force. August, 1899	paper 5c
Ore, phosphate deposits and general geology of. (Geological Survey, 21st annual report, pt. 3)	cloth $1.75
Penal code. June, 1900	paper 10c
People of. (56th Cong., 2d sess., Senate doc. 218)	paper 5c
Petitions of natives of. (57th Cong., 1st sess., Senate doc. 323.)	paper 5c
Political affairs in, papers relative thereto. (57th Cong., 1st sess., Senate doc. 259)	paper 5c
Pronouncing gazetteer and geographical dictionary of, with maps, charts, and illustrations; also laws of civil government in, with complete index, September, 1902	cloth $2.10
Punishments under law passed by Philippine Commission. (57th Cong., 1st sess., Senate doc. 172)	paper 5c
Railroads in, legal and traffic relations of. (57th Cong., 1st sess., Senate doc. 283)	paper 5c
Revenues and expenditures in, statement of. Aug. 29, 1898, to June 29, 1902. (57th Cong., 2d sess., Senate doc. 182.)	paper 10c
Spanish public land laws and their history to Aug. 13, 1898. 1901	cloth 15c

PHILIPPINE ISLANDS—Continued.
- Tariff between United States and, memo. relating to. (57th Cong., 1st sess., Senate doc. 134) ---- paper 5c
- Tariff of. (57th Cong., 1st sess., Senate rept. 181, pts. 1 and 2.) paper 10c
  - same. (57th Cong., 1st sess., House rept. 4) ---- paper 5c
- Trade of. 1899. (Foreign markets bulletin 14) ---- paper 10c
- Trials or court-martials in, in consequence of certain instructions. (57th Cong., 2d sess., Senate doc. 213) ---- paper 10c
- What has been done in the Philippines? (58th Cong., 2d sess., Senate doc. 304) ---- paper 5c
- "Will the Philippines pay?" and "The real feelings of the Filipinos." (57th Cong., 1st sess., Senate doc. 273) ---- paper 5c

Philippine situation, testimony and statements of witnesses, American and foreign, concerning. (57th Cong., 1st sess., Senate doc. 422) ---- paper 5c

Philippine Commission's report (Schurmann). 4 vols ---- cloth $2.35
- 1900, 1st report (Taft) ---- cloth 50c
- 1901, 2d report (Taft). 2 vols ---- cloth $1.30
- 1902, 3d report (Taft). 2 vols ---- cloth $1.65
- 1903, 4th report (Taft). 3 vols ---- cloth $3.25

Treason, sedition, etc., laws against, comparison of United States laws and provisions of act 292 of Philippine Commission. (57th Cong., 1st sess., Senate doc. 173.) 1902 ---- paper 5c

PORTO RICO:
- Agricultural resources and capabilities of. (56th Cong., 2d sess., House doc. 171) ---- paper 10c
- Aquatic resources and fisheries of. (From Fish Commission Bulletin, 1900) ---- cloth $1.65
- Attorney-general of, report of, June 30, 1901. (57th Cong., 1st sess., Senate doc. 17) ---- paper 5c
- Auditor of, reports of months of May to October, 1900. (56th Cong., 2d sess., House doc. 137) ---- paper 10c
- Census of, 1899 ---- cloth 65c
- Changa or mole cricket in. 1903. (Porto Rico Agricultural Experiment Station bulletin 2) ---- paper 5c
  - same, Spanish edition ---- paper 5c
- Church lands in, disposition of. (57th Cong., 2d sess., Senate rept. 2977) ---- paper 5c
- Citizenship, literacy, and education. (Porto Rico census bulletin 3) ---- paper 5c
- Civil affairs in, 1898–1900. (Davis, U. S. A.) (56th Cong., 2d sess., House docs., v. 14) ---- cloth $1.50
- Civil code in force in Cuba, Philippines, and. October, 1899. paper 20c
- Civil government for, temporary. (56th Cong., 1st sess., Senate rept. 249) ---- paper 5c
- Code commission—
  - v. 1, pts. 1, 2, and 3. Commentaries on proposed revision. 1901 ---- cloth 85c
  - v. 2, pts. 4 and 5. Text of proposed revision. 1901 ---- cloth $1.60
- Commercial code in force in Cuba, Philippines, and, amended June 10, 1897 ---- paper 20c
- Criminal procedure of Cuba and, law of, with Spanish text, notes, etc., Oct. 1, 1901 ---- paper 40c
- Customs tariff and regulations for ports in possession of United States. 1898 ---- paper 5c
- Economic plants of. (National Herbarium, v. 8, no. 2) ---- paper 60c
- Education, commissioner of, report of—
  - 1902 ---- paper 35c
  - 1903 ---- paper 35c

PORTO RICO—Continued

Eminent domain of Cuba and, law of, extended by royal decree of June 13, 1884, to, and regulations for its application. March, 1901 ---------- paper 5c

Executive council and French railroad, relations between. (56th Cong., 2d sess., Senate doc. 162) ---------- paper 5c

Gazetteer of. 1901. (Geological Survey bulletin 183) - paper 10c

Governor's report—

 1st, May 1, 1900, to May 1, 1901. (57th Cong., 1st sess., Senate doc. 79) ---------- paper 50c

 2d, July 1, 1902 ---------- paper 35c

 3d, July 1, 1902, to June 30, 1903 ---------- paper 20c

 4th, July 1, 1903, to June 30, 1904 ---------- paper 10c

Immigration regulations. June 7, 1899 ---------- paper 5c

Labor conditions in. (Labor bulletin 34) ---------- paper 10c

Laws enacted at last session of legislative assembly of. (57th Cong., 1st sess., Senate doc. 418) ---------- paper 15c

Laws of, report of commission to revise and compile English-Spanish. 2 vols ---------- cloth $2.45

Legislative assembly, first, journals of. (57th Cong., 1st sess., House doc. 41) ---------- paper 20c

List of books on ---------- paper 5c

Mango in. (Plant Industry bulletin 28) ---------- paper 15c

Military government of, Oct. 18, 1898, to Apr. 30, 1900, appendices: I. Superior board of health. II. Board of charities. paper 25c

Military telegraph lines in, with map. June 4, 1900. (56th Cong., 1st sess., Senate doc. 429) ---------- paper 10c

Mole cricket, or changa. (Porto Rico Experiment Station bulletin 2) ---------- paper 5c

 same, Spanish edition ---------- paper 5c

Monthly summary of ---------- paper 10c each

Mortgage law for Cuba, Philippines, and. 1893 ---------- paper 10c

Naval station in. (57th Cong., 1st sess., House doc. 139.) paper 25c

Penal code now in force in Cuba and. July, 1900 ---------- paper 10c

Police law of railroads promulgated Feb. 17, 1888, and regulations for its application ---------- paper 5c

Population by age, sex, race, nativity, conjugal condition, and literacy. (Porto Rico census bulletin 2) ---------- paper 5c

Population by departments, municipal districts, cities, and towns. (Porto Rico census bulletin 1) ---------- paper 5c

Postal service, committee appointed by Postmaster-General to investigate condition of. Nov. 11, 1898 ---------- paper 5c

Provincial and municipal laws. August, 1899 ---------- paper 5c

Public lands in, disposition of. (57th Cong., 1st sess., Senate rept. 1954 ---------- paper 5c

Public lands owned by United States in, report respecting those needed for naval and military purposes. (56th Cong., 2d sess., Senate doc. 117) ---------- paper 5c

Railroad law granted by royal decree of Dec. 9, 1887, and regulations approved Dec. 14, 1887 ---------- paper 5c

Reports of Gen. George W. Davis, and reports on the districts of Arecibo, Aguadilla, Cayey, Humacao, Mayaguez, Ponce, San Juan, Vieques, and the subdistrict of San German. Sept. 19, 1899 ---------- paper 10c

Revenues and civil government for. (56th Cong., 2d sess., Senate rept. 2296) ---------- paper 5c

Soil survey, Arecibo to Ponce. 1903. (Porto Rico Agricultural Experiment Station bulletin 3) ---------- paper 10c

 same, Spanish edition ---------- paper 10c

PORTO RICO—Continued
- Taxes, levy and collection of. (56th Cong., 1st sess., Senate doc. 300) ---- paper 10c
- Tobacco investigations in, 1903–4. (Porto Rico Experiment Station bulletin 5) ---- paper 5c
- Trade of. 1898. (Foreign Markets bulletin 13) ---- paper 5c
- Treasurer, disbursements by. (56th Cong., 1st sess., House doc. 136) ---- paper 5c

POST EXCHANGE:
- Improvement of, in military establishment. (57th Cong., 1st sess., Senate doc. 267) ---- paper 5c
- Social features of. (57th Cong., 1st sess., Senate doc. 203.) paper 5c
- Regulations, May 1, 1899 ---- paper 5c
  - same, Feb. 2, 1901 ---- paper 5c
- Sale of beer and light wines in, reports relating to. (57th Cong., 2d sess., House doc. 252) ---- paper 25c

SALVADOR:
- Handbook of, 1892, revised to Mar. 1, 1894. (American Republics bulletin 58) ---- paper 35c

SANTO DOMINGO:
- Handbook of, 1892, revised to Mar. 1, 1894. (American Republics bulletin 52) ---- paper 35c

SOUTH AFRICA:
- Military operations in China and. 1901. (Military information series 33) ---- paper 75c
- Papers relating to war in. (56th Cong., 1st sess., Senate doc. 386) ---- paper 5c

SPAIN:
- Agriculture in, letters on. (Plant Industry bulletin 27) ---- paper 15c
- Foreign trade of, 1898. (Foreign Markets bulletin 11) ---- paper 5c
- Proclamations and decrees during war with ---- paper 10c
- Public instruction in. (Circular 1, 1873, Bureau of Education.) paper 5c
- Revenue-Cutter Service in war with, 1898 ---- paper 5c
- Trade with, 1888–1897. (Foreign Markets bulletin 12) ---- paper 5c
- Treaty of peace with—
  - text ---- cloth 50c
  - map ---- paper 90c
- War with, comments of Rear-Admiral Pluddeman, of German navy, on main features of. (War notes 2) ---- paper 5c

SPANISH-AMERICAN WAR:
- Blocades and coast defenses. (War notes 6) ---- paper 10c
- Sketches from, by [Commander] J[acobsen]. (War notes 3 and 4) ---- paper, each 5c
- Squadron of Admiral Cervera, by Palau. (War notes 8.) paper 10c
- Squadron operations in West Indies, collection of documents relating to, arranged by Admiral Cervera. (War notes 7.) paper 15c
  - *See* War notes, Naval Intelligence Office.
- Spanish-American war claims. (56th Cong., 1st sess., House doc. 460, 3 pts., v. 92) ---- cloth 60c
- Spanish navy in late war, views of Admiral Cervera ---- paper 20c

SUEZ, MARITIME CANAL OF:
- Free navigation of. (56th Cong., 1st sess., Senate doc. 151.) paper 5c
- From its inauguration, Nov. 15, 1869, to 1884. (48th Cong., 1st sess., Senate ex. doc. 198) ---- paper 25c

SUEZ, MARITIME CANAL OF—Continued.

Traffic, finances, shipping and tonnages, and receipts and expenditures of. (58th Cong., 1st sess., Senate doc. 20.) paper 10c

SURGEON-GENERAL'S OFFICE (ARMY), INDEX CATALOGUE OF LIBRARY:

First series—

v. 1 -------- cloth $2
v. 2 -------- cloth $2
v. 3 -------- cloth $2

Second series—

v. 1 -------- cloth $2
v. 2 -------- cloth $2
v. 3 -------- cloth $2
v. 4 -------- cloth $2
v. 5 -------- cloth $2
v. 6 -------- cloth $2
v. 7 -------- cloth $2
v. 8 -------- cloth $2
v. 9 -------- cloth $2

Surgical history of the war of the rebellion. *See* Medical and surgical history of war of rebellion.

TEST OF METALS:

1893 -------- cloth 75c
1895 -------- cloth $1.20
1896 -------- cloth $1.10
1897 -------- cloth $1
1898 -------- cloth 85c
1899 -------- cloth 70c
1900 -------- cloth 80c

URUGUAY:

Handbook of. 1892. Revised to Sept. 1, 1893. (American Republics bulletin 61) -------- paper 35c

VENEZUELA:

Geographical sketch, natural resources, laws, economic conditions, actual development, prospect of future growth. 1904. (Bureau of American Republics) -------- paper $1

Handbook of, February, 1892. (American Republics bulletin 34) -------- paper 30c

Handbook of, revised edition 1899. American Republics bulletin 93, pts. 1 and 2. (Bound in Bureau of American Republics report, 1899, pt. 4, with Worthington's reports on Commercial Mission to South America; 56th Cong., 1st sess., House doc. 175, pt. 4) -------- paper 65c

VENEZUELAN BOUNDARY CONTROVERSY:

Correspondence between Great Britain and Venezuela. (50th Cong., 1st sess., Senate ex. doc. 226, reprint, 1896) - paper 20c

Report of Venezuela and British Guiana boundary commission, 1898. 3 vols -------- paper $1.30, cloth $1.75

same. Maps -------- paper $2, cloth $2.75

WAR DEPARTMENT:

Annual reports—

1897. Secretary and miscellaneous -------- cloth 65c
Engineers, 6 vols -------- cloth $6.50
Ordnance -------- paper 55c, cloth 70c

1898. Secretary and miscellaneous -------- cloth 90c
Major-General -------- cloth $1.30
Engineers, 6 vols -------- cloth $6.50
Ordnance -------- cloth 40c

War Department—Continued.

- Annual reports—Continued.
  - 1899. Secretary ---------- cloth 75c
    - Bureau chiefs ---------- cloth 75c
    - Major-general, 3 vols ---------- cloth $2.35
    - Generals Brooks, Davis, and Wood. (Reports on Cuba.) cloth 60c
    - Engineers, 6 vols ---------- cloth $6.30
    - Ordnance ---------- cloth 75c
  - 1900. Secretary and miscellaneous ---------- cloth 60c
    - Bureau chiefs ---------- cloth $1.15
    - Lieutenant-General, 7 vols ---------- cloth $7.55
    - Civil affairs in Philippines ---------- cloth 30c
    - Civil affairs in Cuba, 8 vols ---------- cloth $6.30
    - Civil affairs in Porto Rico ---------- cloth $1.50
    - Engineers, 8 vols ---------- cloth $9.60
    - Ordnance ---------- cloth 60c
  - 1901. Secretary ---------- cloth $1.05
    - Bureau chiefs ---------- cloth $1.05
    - Lieutenant-General, 5 vols ---------- cloth $2.40
    - Philippine Commission, 2 vols ---------- cloth $1.30
    - Public laws and resolutions passed by Philippine Commission ---------- cloth 60c
    - Engineers, 6 vols ---------- cloth $5.40
    - Ordnance ---------- paper $1.15, sheep $2
  - 1902. Secretary and bureau chiefs ---------- paper 40c, cloth 55c
    - Engineers, 4 vols. and supplement ---------- paper $4, cloth $4.75
    - Ordnance and Board of Ordnance and Fortification. paper 80c, cloth $1
    - Miscellaneous ---------- paper 10c, cloth 20c
    - Lieutenant-General ---------- paper 70c, cloth 85c
    - Philippine Commission, 2 vols ---------- paper $1.40, cloth $1.65
    - Acts of the Philippine Commission ---------- paper 25c, cloth 35c
  - 1903. Secretary ---------- paper 30c, cloth 40c
    - Armament, transportation, and supply ---------- paper 25c, cloth 35c
    - Department of division commanders ---------- paper 60c, cloth 70c
    - Military schools and colleges; Record and Pension Office; military parks, and Soldiers' Homes ---------- paper 70c, cloth 85c
    - Philippine Commission, 3 vols ---------- paper $2.90, cloth $3.25
    - Acts of the Philippine Commission ---------- paper 45c, cloth 60c
    - Engineers, 4 vols. and supplement ---------- paper $5, cloth $6
    - Ordnance ---------- paper 65c, cloth 75c
  - 1904. Reports of Secretary, Chief of Staff, Military Secretary, Inspector-General, and Judge-Advocate-General. paper 20c, cloth 35c
    - Division and department commanders ---------- paper 20c, cloth 35c
    - Military schools and colleges; militia affairs; military parks, and Soldiers' Homes ---------- paper 35c, cloth 50c
    - Armament, transportation, and supply ---------- paper 25c, cloth 40c
    - Acts Philippine Commission ---------- cloth 55c
    - Engineers, 4 vols. and supplement ---------- paper $5.95, cloth $6.75
- Artillery Circulars. (Adjutant-General's Office)—
  - A. 1899. (Feb. 12, 1892.) Resistance of guns to tangential rupture ---------- paper 10c
  - B. 1893. (Jan. 16, 1893.) Gunpowder and high explosives. paper 10c
  - C. 1893. (Jan. 17, 1893.) Electricity and its applications in artillery practice ---------- paper 10c
  - D. 1903. (Revised to Mar. 6, 1903.) Use of meteorological instruments ---------- paper 10c

War Department—Continued.
  Artillery Circulars—Continued.

F. 1893. (Apr. 25, 1893.) Ballistics	paper 20c
F. 1893. (Apr. 25, 1893.) Supplement	paper 10c
M. 1900. Ballistic tables	paper 25c
Business methods in. 1889	cloth 25c
Conduct of, in war with Spain. 8 vols. (56th Cong., 1st sess., Senate docs., vols. 17–24)	cloth $4
same, report of commission, Feb. 9, 1899	paper 10c
War in Europe, art of, in 1854–5–6. (Delafield)	cloth $2.35
War notes. *See* Naval Intelligence Office.	

War with Spain:

Conduct of War Department in. 8 vols. (56th Cong., 1st sess., Senate docs., vols. 17–24)	cloth $4
Food furnished to troops in Cuba and Porto Rico during. (56th Cong., 1st sess., Senate doc. 270, 3 pts. vols. 28, 29, and 30.)	cloth $2
Message of the President to Congress and accompanying documents, abridgement of, 1898–99, 4 vols	cloth $4

The most complete official account yet published of the war with Spain and the operations of the United States forces by land and sea.

INDEX.

Page.

Ages of officers, Italy 143
Argentina, notes on 3
Armies, increase of various 214
Artillery, field:
    Austria 7, 20, 21
    England 49, 50
    France 82, 83, 96
    Germany 122, 131
    Japan 149, 159, 162
    Netherlands 165
    Portugal 166
    Reflectors for 8
    Roumania 167
    Russia 178, 181, 183, 184
    Sweden 200
Artillery:
    Fortress, Austria 23
    Mountain, Russia 172
Austria-Hungary:
    Military preparations 11
    Notes on 6
    Proposed army reforms 9
Austrian Landwehr 16
Automatic rifles, England 51
Bolivia, notes on 29
Books of military interest, list of 217
Brazil, notes on 31
Budget, war:
    Austria 11, 14
    France 88
    Germany 118
    Italy, various years 141
    Japan 153
    Russia 173
Bulgaria, notes on 32
Changes in organization, Austria 6
China, notes on 33
Cavalry, France 96
Cavalry drill regulations:
    England 46
    Italy 142

Page.

Cyclists, military:
  France 87
  Germany 128
Denmark, notes on 36
Diary of war 205
England:
  Commands, etc 40
  Cavalry drill regulations 46
  Commissions for officers of militia 42
  Inspector-general of forces 41
  New short rifle, the 44
  Notes on 38
  Reorganization 39
    Of fleet 66
Equipment of soldier:
  England 61
  France 80
  Italy 136, 140
  Japan 144
Equipment, experimental, England 64
France:
  New coast-defense gun 92
  New submarines 102
  Notes on 78
  Secret funds 92
  Weighing of men 81
Germany:
  New service law 105
  Notes on 103
  Ponton boats 104
Greece, notes on 132
Holland, notes on 133
India, notes on 68
Indian army, the 68
  Training of 72
Infantry, strength of company:
  Italy 137
  Various armies 138
Infantry, France 97
Italy, notes on 134
Japan:
  Notes on 144
  Training of soldier 147
Machine guns:
  Denmark 36
  France 98
  Germany 103
  Russia 168

Machine guns—Continued. Page.
  Switzerland 201
  Employment of, in Germany 130
Malay States, notes on 75
Maneuvers:
  England 52
  France 93
  Germany 123
Mechanical traction 52
Medical service, France 86, 101
Medical statistics, France 79
Motor cars:
  Austria 27
  Germany 129
Navy, the, England 66
Naval losses, Russia 191
Navy, vessels launched 215
Netherlands, notes on 165
Portugal, notes on 166
Publications of military interest, list of 217
Rations:
  England 62
  Japan 144
Recruiting:
  France 85
  Germany 121
Recoil controlling device 215
Reorganization, England 39, 40
Roumania, notes on 167
Russia, forces in Manchuria 176
Russian naval losses 191
Russia:
  Notes on 168
  Wagon trains 171
Sanitary statistics, Austria 26
Sapper's tools 136
Service, term of:
  England 43
  France 78
  Germany 105
Small arms, Japan 158
Spain:
  New staff units 194
  Notes on 193
  Reorganization of army 193, 195
  Reorganization of war college 198
  Strength of army 193
Submarines 102
Surveys, England 51

Page.

Sweden, notes on ---------- 200

Switzerland:

- Military reforms ---------- 202
- Notes on ---------- 201
- Strength of army ---------- 201

Targets for small arms ---------- 76

Telegraphy, School of, Austria ---------- 28

Turkey, notes on ---------- 204

Uniforms, experiments with ---------- 37

War, Russo-Japanese, diary of ---------- 205

Wireless telegraphy:

- England ---------- 65
- Germany ---------- 129

O

STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES
STANFORD UNIVERSITY LIBRARIES

Stanford University Libraries
3 6105 127 306 533